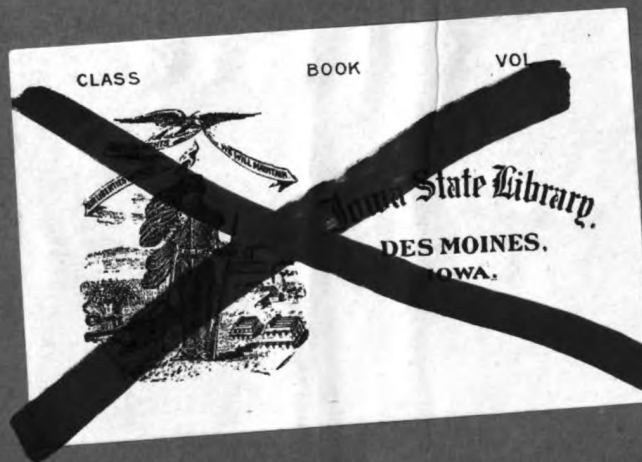


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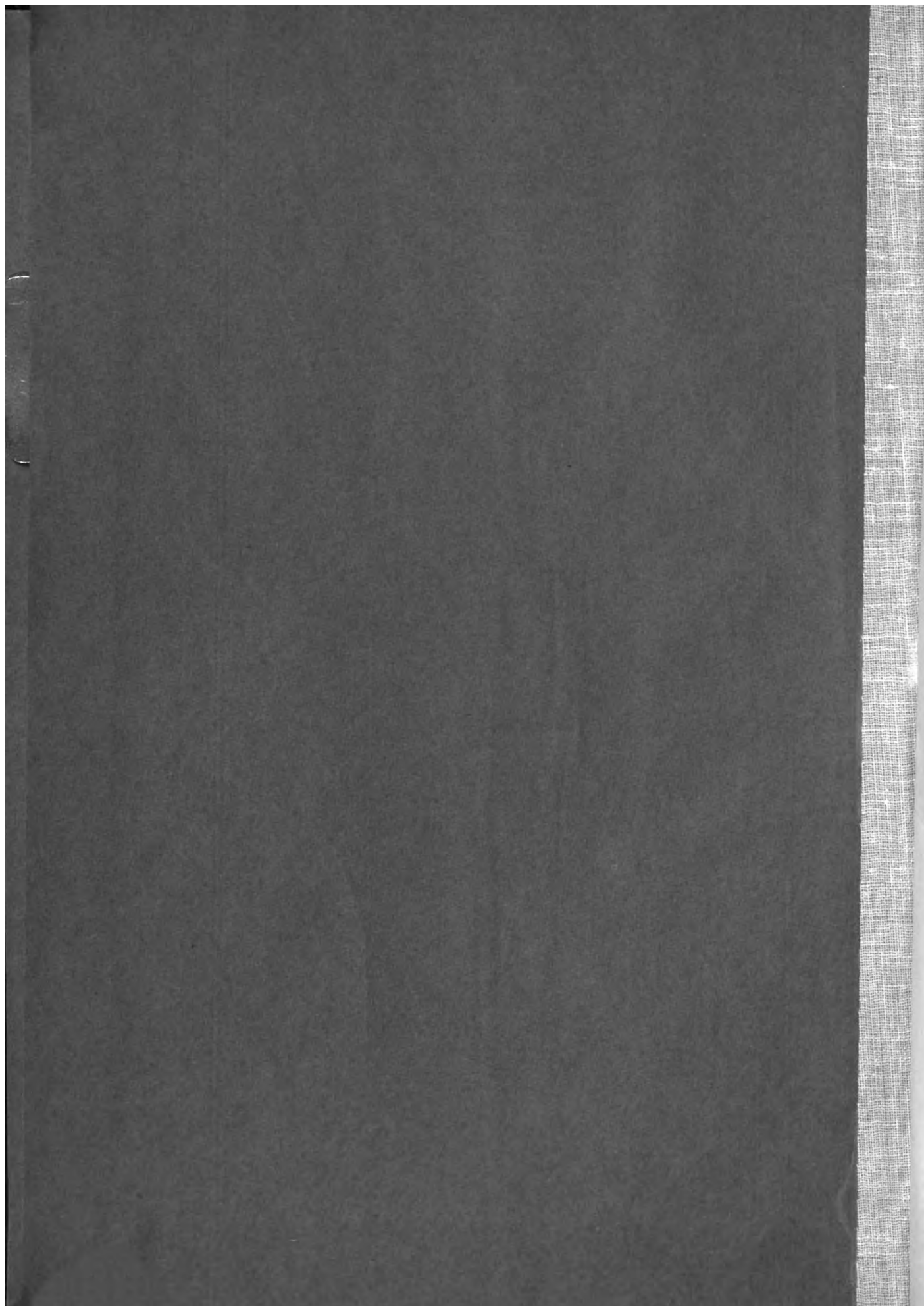
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Observations

ON

THE FUTURE OF THE CRIPPLED SAILOR AND SOLDIER.

By C. W. HUTT, M.A., M.D. CANTAB.,
D.P.H. OXON.

THE presence in our midst of crippled sailors and soldiers in ever-increasing numbers renders opportune a short account, necessarily incomplete, of what is being done and what can be done for them. His Majesty the King, when visiting the workshops at Roehampton Hospital for sailors and soldiers who have lost a limb, said: "No effort must be spared to get these men out of the unskilled labour market." The first consideration therefore should be the training of crippled ex-service men in a skilled trade. We are fortunate in this country in being able to draw upon the experience of our gallant ally, France.

THE DISABLED EX-SERVICE MAN IN FRANCE.

The education of disabled soldiers in France is carried out largely at special institutions created for the purpose, *Écoles Professionnelles de Blessés*. Their aim is to teach a new trade to men unable to follow their former occupation, or to afford others an opportunity of re-adapting themselves to their former work.

The first *École Professionnelle* was opened at Lyons in November, 1914; since then more than 20 similar schools have been formed in different parts of the country. In most the men are boarded and lodged at the institution except when they are inhabitants of the town in which the school is situated. Although the funds are in some measure obtained from private sources, the chief standby is an allowance, usually of 3 francs 75 centimes per day per man, provided by the State. It is obviously futile to expect a man in the position of a discharged soldier to take up training when he could be earning some sort of a wage unless it is made worth his while. Not only is no charge made for the training or keep, but a small wage (50 centimes a day as a rule) is paid and the men are given the money resulting from the sale of the articles they make. Dr. Carle, of the Lyons *École*, has found that his greatest difficulty hitherto has been to dispel from the minds of the men that the acceptance of training at an *École Professionnelle* will in some way result in a deduction from their pension or allowance.

The length of the courses varies considerably in the different institutions. Dr. Bourrillon, Directeur de l'Institut National Professionnel des Invalides de la Guerre de St. Maurice (Seine), near Paris, considers that at the end of six months the vast majority of the men who have undergone instruction either in harness-making, boot-making, tailoring, or tin-smithing, &c., are able to earn their living, although, of course, they are not complete masters of the craft. Arrangements should, he thinks, be made that the employer should undertake to arrange for the men to obtain practical experience of the whole of the work undertaken in his workshop.

Most of the *Ecoles Professionnelles de Blessés* arrange for longer courses of training. For example, at the *École Professionnelle* of St. Etienne (Loire) the length of the apprenticeship for the various trades is about 12 months, varying from 10 months for instruction in business methods to 18 months for tailoring. At Bordeaux, where long courses are provided for other occupations, it is considered that four to six months is sufficient to learn basket-making, and three to four months the making of *espadrilles* (shoes with a cotton upper and string sole).

As is only natural, most of the *Ecoles Professionnelles* consider it essential that a pupil should be trained in the school and not in the workshop only; they point out that the manufacturer is concerned chiefly in obtaining the maximum of production, not in creating a good all-round workman. On the other hand, the methods of the *École Professionnelle* are condemned by the manufacturer as being needlessly academic. As a matter of practice, most of the societies

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dealing with disabled soldiers have adopted the principle of providing training at an *École Professionnelle* except where only a few candidates for a particular trade are forthcoming. For instance, at Clermont photography, plumbing, engraving, and the setting of fine stones are taught by employers on their own premises; the school authorities, however, supervise the instruction and the men board and lodge at the school.

A complete exception to the rule occurs at Orleans, where the men are taught only in the workshops of private firms. The St. Maurice Centre not only provides an *École Professionnelle* at St. Maurice, but also an hotel-annexe at Paris for men employed in the workshops of private firms until their earnings enable them to pay their own way.

An example of the action of particular trades in France in supplying training for their trade is found at Elbeuf (Seine Inférieure), a centre of the textile industry, not far from Rouen. At the Elbeuf *École Pratique d'Industrie* free tuition is afforded to discharged soldiers or sailors who have for all practical purposes the complete use of their arms and hands. The instruction provided includes the actual making of the various materials, designing, and the necessary technical training for shop assistants and clerks engaged in the trade. Work will be found for them by a committee formed chiefly of the manufacturers of the district.

EDUCATION OF DISABLED MEN IN THE UNITED KINGDOM.

Although the work for crippled sailors and soldiers has not hitherto been organised so thoroughly in the United Kingdom as in France, yet, taken altogether, a considerable bulk of work has already been done.

Training during convalescence is being carried on to a considerable extent in England. At the Training Centre of the Duchess of Connaught Canadian Red Cross Hospital, Cliveden, Bucks, of which Major Astor, M.P., is the chairman, instruction is afforded during convalescence in land industries as well as workshop crafts. The instructors in land industries are the departmental heads of the Cliveden Estate. The subjects taught include gardening, horticulture, fence-making, horse and pig-keeping. At the workshops the men are engaged in: (i.) Woodcraft industries with and without machinery, including carpentering and toymaking. (ii.) Cigarette-making by machinery; this work is taken up so as to offer a home industry to the men who, with a machine costing from £23 to £25, can make 5000 cigarettes a week, yielding a net profit, allowing for depreciation, of 25s. to 30s. a week.

Advantage has been taken of the unique facilities available at the Heritage Craft Schools, Chailey, the well-known residential institution founded by Mrs. C. W. Kimmins for the teaching of arts and crafts to crippled boys. Part of the institution was taken over by the War Office to serve as a relief hospital for convalescent soldiers, many of whom were suffering from the loss of a limb. To each of the crippled soldiers were assigned as orderlies two crippled boys suffering from the same loss of limb; the men during their physical re-education were enabled to profit by the boys' experience. The soldiers were encouraged to enter the workshops and take advantage of the instruction afforded; they took part eventually in the woodwork, including turning and toymaking, beaten copper-work, book-binding, basket- and rug-making.

At the Roehampton and the Brighton Pavilion Hospitals for limbless sailors and soldiers (Queen Mary's Convalescent Auxiliary Hospitals) instruction is provided for patients during convalescence in: (i.) Electrical work, fitting, &c., in connexion with electric lighting, motors, telephones, and bells; (ii.) motor driving and repairs, making of spare parts, &c.; (iii.) carpentering, including woodwork and turning.

The employment bureau of the hospital places these men as chauffeurs, garage attendants, &c., assistant electricians, or lift men in business houses, hotels, and private mansions, or in positions where a certain amount of practical knowledge of carpentering is required. Many offers of employment come from owners of private estates; men who are able to make or repair five-barred gates, doors of barns, woodwork of wells, &c., can be usefully employed on a private estate. If they are also able to run a motor to supply electricity and execute any small repairs required either to the motor or electrical fittings generally their value is correspondingly greater.

P

At these hospitals, commercial classes are also held by Clark's College in book-keeping, typewriting, shorthand, &c. The men join these classes to improve their knowledge in various directions and to assist them in the work of store-keepers, time-keepers, or similar occupations. The number who join with a view of taking up work as clerks is more limited, but is gradually increasing. If for any reason the men have not taken up a situation, they are allowed to attend free of charge classes at any of the London or provincial branches of Clark's College until placed. The wages obtained by the men when placed vary from 25s. to 40s. a week.

Although this work is valuable, yet Mr. Robert Mitchell, the director of education of the Regent Street Polytechnic, who is in charge of the training at Roehampton and Brighton, is in agreement with the principle that some of the men who have commenced training in these classes should continue their instruction after leaving the hospital at technical colleges or institutes, polytechnics, &c., in the towns where they live. He has arranged for a few men to continue training in electrical fitting at the Regent Street Polytechnic.

Training Provided by City Livery Companies.

A course of training in woodwork, &c., entirely free, is afforded at the Carpenters' Company's Technical Schools, during which the Incorporated Soldiers and Sailors Help Society agreed to find the necessary maintenance money, if required, for selected candidates during the course of instruction.¹

The Cordwainers' Company are training men in leather work. A class of 12 crippled ex-service men are being taught hand-sewn boot-making and boot-repairing at the Cordwainers' Technical College, Bethnal Green-road, London, E. The course lasts 46 weeks. The Trades Advisory Committee of the Company, before the class was started, went thoroughly into the prospects of employment, and formed the conclusion that in normal times a good workman could be sure of earning good wages at hand-sewn work.² Classes to teach the making of fancy leather goods are being conducted at the college; maintenance money is provided for both sets of men.

The Incorporated Soldiers and Sailors Help Society.

The Incorporated Soldiers and Sailors Help Society has been at work since the South African War (1899-1901). In addition to assisting over 280,000 men in various other ways, the society has established workshops at Fulham (London), Brookwood (Surrey), Colchester, Birmingham, Liverpool, Bradford, Edinburgh, and Belfast, in which skilled trades are taught to men who have been permanently disabled on active service. The trades taught include carpentering, cabinet-making, polishing, carving and gilding, framing, toy-making, basket-making, metal work, building and construction, decorating, and electrical fitting.

The society has admitted over 200 disabled men from the present war to the workshops. For every £100 received in subscriptions, they are able to teach a disabled man a trade, pay him an average wage of £1 a week for the first year and 25s. a week afterwards. The men are quite unskilled when they enter the workshops, yet soon become competent workmen. They have won the highest distinction at many international exhibitions, including the Franco-British, the Japan-British, the Festival of Empire, the Coronation, and the Imperial International. The experience of the society is that for a workshop to pay its way at least 100 men should be employed in it; this enables the work to be standardised and to be turned out in fairly large quantities.

Private Firms.

An example is set by a firm who are training crippled men in metal work; among other articles, they make the parts of chemical fire-extinguishers. The firm will employ young men under 22 years of age who have the use of both hands and arms, and is prepared to indenture them for a period of three

¹ The society made up the incomes of single men, including pension and National Health Insurance benefit if any, to £1 a week, and of married men to 25s. a week, with 2s. a week for each child, during the course of their training.

² A word of caution is necessary with regard to short courses of three months only for boot-repairing, &c. While in France the village cobbler still flourishes, in England he is practically extinct. Country people nowadays buy ready-made boots; the money to be made by repairing boots is quite inadequate for a living. For instance, in one of the largest villages in Sussex boot-mending is done by a man whose chief occupation is that of a cow-keeper; he acts as a cobbler in the evening.

years without premium at good wages, and teach them metal-working in all its branches. At the end of that period they will be guaranteed regular employment as skilled mechanics at standard wages. During the first six months the men earn £1 weekly; after this period they are paid according to their ability. Up to the present 23 men have passed through their works; but, unfortunately, as soon as they learn one branch of metal-working—e.g., filing, drilling, soldering, riveting, &c.—they leave to earn the temporary high wages obtainable elsewhere, instead of staying on to become thoroughly competent workmen.

A manufacturer of fancy-leather goods (ladies' leather belts, hand-bags, purses, note and letter cases, &c.) attends twice a week at the Roehampton Hospital with some of his staff to demonstrate the manufacture of ladies' hand-bags and to interest the men in the trade. On discharge the men are trained at the workshops of members of the National Leather Goods Association, a weekly wage of £1 being paid to commence with. The work allows of the men sitting; about three months is required to learn each section of the trade. As the fancy leather goods trade was essentially a German industry before the war, about £4,000,000 worth of goods being imported annually, the trade affords abundant scope for crippled men. The Association hopes to place 500 men.

An electric-power company are prepared to train disabled ex-service men as sub-station attendants or switchmen. So far they have only one disabled soldier suffering from a smashed foot, necessitating the use of a crutch, at work (as a sub-station attendant); another discharged on account of a wound in the arm is about to commence duties. In some electric-power works, especially main-power stations, in addition to operating the switches, the men have heavier duties to perform, such as cleaning, overhauling and adjusting plant. The electric power company in question, however, consider that in stations where large units are installed more than one man should be employed on the shift when the heavy cleaning work is undertaken, men with dissimilar injuries being selected to supply one another's deficiencies. The work of overhauling and adjustment should be carried out by workmen with sound limbs. The requirements of the company are met if the disabled man can get about his work reasonably well and if he is intelligent enough to act promptly in emergencies.

Agriculture.

The Departmental Committee on the land settlement for ex-service men, presided over by Sir Harry Verney, stated that they had no doubt that the openings for disabled men in agriculture were considerable, and were of the opinion that such men could carry on poultry, pig, and calf-rearing, fruit cultivation, bee-keeping, home industries, small dairy farming, and mixed production on small holdings.

A number of disabled men are receiving training in horticulture and other work at the Holmes Chapel College of Agriculture, Cheshire, in accordance with the arrangements made by the Board of Agriculture. The men are instructed, boarded, and lodged free of charge; no deduction of any sort is made from their pension. A three months' course enables men who have had considerable agricultural experience before joining the service to obtain satisfactory employment on farms; such men take the course of training to obtain knowledge of a special branch of the work, such as cheese-making. The short course also serves to indicate those men whose work and character are sufficiently satisfactory to warrant the expenditure on a further nine months' course of training.

ABILITIES OF MEN WITH VARIOUS LESIONS.

It is impossible to lay down any hard-and-fast rules as to the occupations available for men with certain defects; the ingenuity and perseverance of some of the disabled men are such that they manage to work at trades most people would consider them unfitted for. For instance, I have seen men with one sound arm and the stump of the other arm working at electric fitting, and a man with his right arm amputated near the shoulder-joint carrying out all the repairs required to the agricultural machines of a large farm.

The man who has lost an arm is, of course, much more limited in his choice of a trade than the man who has lost one or both legs. At the Lyons Ecole, the occupations found most suitable for one-armed men are toy-making and various parts of the book-binding trade. At Montpellier

the following occupations are being taught to men who have lost, or lost the use of, an upper limb.

| Occupation. | Nature of the Patients' Lesions. |
|--|---|
| Wood-turner | Amputation of left forearm. Amputation of right forearm. Injury to right hand, two fingers amputated, other digits ankylosed. Ankylosis of right shoulder. Ankylosis of left elbow. Musculo-spiral paralysis (2 patients). |
| Tailor | Ankylosis of left elbow. Paralysis of right arm. Ankylosis of right elbow. Ankylosis of right elbow and wrist. Paralysis of right radial nerve. |
| Boot-maker | Ankylosis of right shoulder. |
| Ajusteur - mécanicien (Skilled mechanic). | Amputation of right arm and left thigh. Amputation of right arm and thigh. |

At Bordeaux, of 49 pupils learning manual occupations, 28 had sustained an injury to the arm; of these, 10 were learning basket work.

At Bourges, where drawing is taught to men whose arms have been amputated, pupils who have followed other occupations and have not previously been taught drawing except at an elementary school, have been taught to make plans, &c., sufficiently well to justify their employment in departments analogous to our Board of Works and borough surveyors' departments. Needless to say, the aim of the school is not to make artists but capable draughtsmen. The school authorities point out the openings for men who can learn to draw—designers of lace, engravers, lithographers, ticket writers, sign writers, &c.

At St. Étienne the men learning horticulture, kitchen gardening, gardening, and agriculture are, for the most part, suffering from ankylosis of an arm; two have lost an arm.

In the United Kingdom, telegraphy and telephony apparently offer possibilities for one-armed men, provided that the arrangements can be made for their obtaining occupations in the General Post Office after training.

Although manual pursuits are preferable, clerical work will be an occupation most suitable for a large number of men with loss of, or an injury to, the arm. The handling of heavy ledgers is more difficult for one-armed men, but this difficulty has always been overcome by the employers of men from Roehampton Hospital. At this institution, men who have lost their right arm have acquired in a short time an amazing degree of efficiency both in longhand and shorthand writing; they can, if they will take the trouble, learn to write well with the left hand. Typewriting can be done with one hand; if the patient can use his stump or an appliance fitted on to it to depress the space bar at the end of each word, he will be able to typewrite with practice at quite a satisfactory speed.

Very few trades are absolutely closed to men who have lost their legs. Some of the disabled men express the fear that they will not be able to undertake work involving long standing; possibly this fear is justified in the case of heavy men with an amputation near the hip. Dr. Carle of the Lyons École considers wood-work, especially joinery, unsuitable for men with an amputation of the left leg much above the knee, but I have seen a fair number of men with amputations near the left hip carrying out this work, including planing, which is supposed to be the special difficulty. The experience of the Soldiers and Sailors Help Society on the effect of the loss of a leg, is, of course, valuable. They consider that "the loss of one leg does not debar a man from being quite as useful as he would be with two legs, provided a little care is taken with him in the early stages; and we consider that if we were to take two men, the one having all his limbs and the other minus a leg, we should be more successful with the man minus a leg than with the able-bodied one, for this reason, that the man with the one leg realises that he is not quite so useful as the other man, and therefore lays himself out to be as useful as he can possibly manage to be. We can arrange suitable work for men who have lost both legs; it is only a matter of getting the man to his bench or into his chair each morning. The loss of a leg and arm is a little more difficult, but for even cases such as these we can find plenty of work."

A large sphere of semi-skilled labour exists in factories where machines are employed to carry out one particular

operation. Even a one-armed man is able to use such various machines as circular saws, band saws, drills, &c.; the man with injuries confined to the legs will experience very little difficulty in working light machines. The necessary training for such work can only be obtained in the factories of the employers; fortunately many employers have expressed their opinion to the War Pensions Statutory Committee that their foremen will be willing, and in fact anxious, to teach the disabled men the use of these machines.

The Committee appointed by the Home Secretary to consider the matter have pronounced the driving of public vehicles such as motor-cabs, motor-omnibuses, and tramway-cars unsuitable for men who have suffered the loss of an arm, hand, leg, or foot. They point out that the best of artificial limbs are liable to fracture; such an event happening at an emergency might produce serious results. The loss of an eye is also considered to debar the man from such employment. In the case of injury to one eye, provided the other eye is sound and the injured eye retains fair vision, they consider a licence might be granted, each case being, of course, decided on its merits.

As regards other minor disabilities, such as loss of one or more fingers, or other damage to the hands, limitation of movements of joints of the upper or lower extremities, or shortening of the lower extremities, and the results of injuries to nerves of limbs, they recommend that the existing practice continue to be followed, and that each case be dealt with on its merits at the discretion of the Commissioner of Police with, in doubtful cases, a power of reference to a special medical referee.

Nothing prevents the employment as garage attendants of men debarred as above from becoming drivers of public motor vehicles, but often such attendants are called upon from time to time to act as drivers. No difficulty would arise with regard to standing engagements providing the consent of the hirer were obtained to the employment of such a man as driver, but casual hirings where the condition of the man was not known to the hirer would probably not be permitted by the police authorities.

ARTIFICIAL APPLIANCES FOR THE ONE-ARMED.

At Montpellier considerable attention is being paid to the designing of artificial appliances to assist men suffering from loss of or injury to the arm. The appliances serve to hold various tools in the desired manner; they are made by crippled men and are tested and used by the crippled men working in other sections of the school.

A grip has been designed to hold a tool in any position; a modification serves to hold the instruments used in drawing and engraving. A simpler modification enables a mechanic to hold his tools in the three positions in which the screw-driver, hammer, and file respectively are used. To enable wood-turners to drill a hole, &c., the school has devised a socket fitted with springs to grasp the head of the tool firmly.

M. Bessat has designed a gauntlet³ for the use of men with musculo-spiral paralysis. M. Dronsart, the director of the technical work of the school, states that the gauntlet has enabled a carpenter to resume his former trade, and two pupils, who are learning designing, to use their instruments as efficiently as their fellow-pupils with the use of two hands.

For digging a long socket and stirrup have been combined. The socket fits over the upper part of the shaft of the spade, of which the ordinary handle is omitted. Raising and lowering the spade is permitted by a joint at each side of the socket, where the bar of the stirrup passes through it in the median plane above the top of the shaft of the spade.

At Lyons the one-armed men engaged in the stitching of books and the putting on of the covers are enabled to use their stump to hold the leaves or the cover by the use of an artificial appliance to which is fitted at the end of a rod a small wooden block surmounted by a clip; between the clip and the block is placed the article it is desired to hold. In another apparatus the movements of the chest wall are utilised to open and close a grip without the intervention of the sound hand. The school is also endeavouring to modify the classical hook and ring fitted to artificial arms so as to enable the men to hold more firmly the handles of their tools. But Dr. Carle frankly owns that he has paid unexpected visits

³ A simple apparatus for use in cases of musculo-spiral paralysis, patented in Great Britain, is described and figured in THE LANCET, vol. II., 1916, p. 624.

to the workshops and found that a workman provided with a carefully devised artificial implement has placed it on the table and is working away with his sound arm and stump. Dr. Bourrillon, of the St. Maurice Institut Professionel, also says—

"Je n'ai pas encore jusqu'ici rencontré d'appareils prothétiques qui puissent rendre de réel service dans un apprentissage quelconque."

And again—

"Je ne crois guère à l'utilisation, au point de vue professionnel, des appareils de prothèse des membres supérieurs. Ce ne peut être, à mon avis, que dans des cas très restreints que ces appareils peuvent avoir une sérieuse portée pratique. Nous n'employons donc dans nos ateliers que des moyens simples que les amputés trouvent eux-mêmes la plupart du temps, pour les aider dans l'exercice de leur profession, et il n'existe aucun dessin de ces dispositifs qui varient beaucoup suivant chaque individu."

In my experience simple appliances are of undoubted service, especially in the working and minding of machines. A one-armed man working a drill at a workshop of the Soldiers and Sailors Help Society made himself an arrangement of wire, which he attached to the stump of his arm to enable him to use it for pulling the lever into position for the drill to take effect. An artificial appliance is of considerable help in clerical work; it enables a man to hold a ruler, to steady a page, to depress the space bar of a typewriter, &c.

Various modifications of apparatus will be doubtless forthcoming and prove useful. The London School of Weaving has brought out a loom for the use of cripples who are unable to use the treadles of an ordinary hand-loom. This loom can be worked by a person with one arm. The stitching pad can be used by the man doing boot-work when he has not a sound knee to press against.

MEN NOT DESIROUS OF LEARNING SKILLED TRADES.

The Corps of Commissionaires with its London headquarters and branches in most of the largest cities of the United Kingdom is probably the largest organisation which deals with the discharged ex-service man not desirous of taking up a skilled trade. All men who have served in any branch of His Majesty's Regular Forces are eligible, provided they come up to the requisite standard of health, physique, education, and can produce a regimental discharge satisfactory as regards character. Men from the Auxiliary Forces are admitted on the same terms as other soldiers if discharged on account of wounds received in action.

The total strength is about 4500, including nearly 2000 serving with the colours; from May, 1915, to May, 1916, 277 men have been admitted to the corps, 127 of whom were discharged for wounds. Many of these latter have lost a limb, all of them have received severe injuries. At present the corps have many more applications for men from employers than they can deal with. Up to the present Major Fielden, commanding the London division of the corps, has had no difficulty in placing men who have lost an arm or the use of an arm; the placing of men who have lost a leg is more difficult. Commissionaires are employed either temporarily or permanently, part-time or whole-time as watchmen (by day or night), clerks, time- and gate-keepers, messengers, caretakers, gymnastic and drill instructors, grooms, boatmen, and porters. Some of these occupations are obviously fitted for crippled men. The average weekly rate of wages for commissionaires in London and other large cities is about 30s., in smaller towns about 28s., but men with superior physical or educational qualifications earn more.

Sir Frederick Milner has pointed out the work available in large stores, shops, and hotels for limbless men; they are capable of working the lifts, acting as attendants in cloak-rooms, &c. Doubtless similar positions and posts as park-keepers, &c., in Government and municipal departments will be filled eventually by ex-service men.

The training provided in England up to the present has been for disabled soldiers with an elementary education, but disabled men of superior education also require provision. The engineering and chemical industries in England are not only in need of men who have had technical training, such as is afforded at the Manchester School of Technology, but they recognise the need and are ready to pay them an adequate salary. It is to be hoped that in the immediate future scholarships adequate in amount will be founded to enable suitable ex-service men to take up such training.

THE RELATION OF THE ENTEROCOCCUS TO "TRENCH FEVER" AND ALLIED CONDITIONS.

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AND

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THE bacteriological investigations carried out in the St. John Ambulance Brigade Hospital have revealed the presence of the enterococcus in numerous diseased conditions, and in the course of routine work evidence has been accumulated which indicates that this coccus is an infective agent in many of the cases admitted to the medical and surgical wards. This striking feature of the bacteriology of the present war has induced us to publish in a preliminary and incomplete form some of the work which has been done in this laboratory on the subject. The attention of other workers may thus be directed to the organism, and if the conclusions arrived at in this paper regarding it are confirmed efforts may be made to prevent or deal with what appears to be a very prevalent and serious infection.

The frequency with which the enterococcus is found infecting wounded men suggested the possibility of it being a cause of illness in the unwounded living under the same conditions in the trenches. To ascertain if this be so was the main object of the investigations outlined in this paper, and it would appear from what follows that the micro-organism may cause a great number of cases of continued, irregular, and intermittent fever that have been described under the title of "trench fever," that it is the infective agent in many cases of "myalgia," and that numerous cases of short fever diagnosed as "influenza" are attributable to it. The scope of this inquiry is very large, as may be inferred from the fact that out of a total number of 2200 medical cases 18 per cent. were "myalgia," 10.5 per cent. indefinite fever, 3 per cent. pleurisy, and 3 per cent. rheumatic fever and arthritis. Owing to the exigencies of a base hospital it was impossible to investigate fully more than a limited number of these cases.

The cases in which infection with the enterococcus was found do not conform to a disease of special type, having characteristic clinical features. Most of the cases, however, have certain symptoms in common, notably sudden onset with fever, headache often orbital, loss of appetite, furred tongue, and pains in the back and lower limbs, especially in the shins. During the course of the illness the patients generally suffer from constipation, bursts of profuse perspiration are of frequent occurrence, and mental depression is often present. The variations in the clinical manifestations are well exemplified by the number of different diagnoses with which the cases have been labelled. This diversity also makes their classification difficult, but for the purposes of description they have been arranged in the following groups, the members of each group bearing a close relationship to each other. Some of the cases in one group will be found resembling cases in another, thus linking the groups together.

1. Septicæmia Group (Table I.).

The cases of septicæmia, charts of which follow, exhibit one period of continuous fever lasting from 11 to 30 days. The onset is almost invariably sudden, with headache, rise of temperature, shivering—sometimes definite rigors and nausea—occasionally vomiting, and general aching pains. The patient when admitted to the hospital may be severely ill, having a temperature from 102° to 104° F., and exhibiting an appearance not unlike a case of typhoid in the early stage of the disease. The tongue is furred, there is generally some swelling or tenderness of the abdomen, and the spleen may be enlarged. The appetite is lost and constipation is almost invariably present. The skin is moist, there may even be profuse sweating. The pulse compared with the temperature is slow. After a few days the initial pains disappear, but the headache is persistent and severe. Herpes may appear on the lips during the course of the illness. The motions are highly offensive. When the temperature has become normal convalescence as a rule is rapid, and there is no recurrence of the pains which accompany the onset; but in a few cases of this type pains

TABLE I.—SEPTICÆMIC TYPE.

| No. | Original diagnosis. | Prominent symptoms. | Type of fever. | Evidence of infection. | Vaccine used. | Effect of vaccine. | Remarks. |
|-----|---------------------|--|----------------------|---|---------------|--|---|
| 1 | Pericarditis. | Sudden onset with vomiting. Classical signs of pericarditis confirmed by radiogram. | Continuous, 17 days. | Enterococcus in urine. Opsonic indices. | Auto-genous. | Fall of temperature and general improvement. | Recovery very rapid. |
| 2 | Septicæmia. | Sudden onset with headache, Headache, malaise, abdominal distension, albuminuria. | Continuous, 11 days. | Enterococcus in blood and urine. | None. | — | Severely ill for 3 days. Recovery rapid. |
| 3 | Slight G.S.W. | Sudden onset with diarrhoea. | Continuous, 12 days. | Enterococcus in blood. | " | — | Case of pyrexia occurring in surgical case. |
| 4 | Influenza. | Sudden onset with headache. Lumbar pain, pain in shins, cough, congestion of bases of lungs, spleen palpable. | Continuous, 30 days. | Enterococcus in urine and sputum. | Auto-genous. | Febrile and focal reaction. | — |
| 5 | Myalgia. | Sudden onset with headache and shivering. Lumbar pain, pain in shins, constipation, furred tongue, abdominal tenderness, rigors, frequency of micturition, restlessness. | Continuous, 17 days. | Enterococcus in urine. | " | Slight febrile and focal reaction, nausea. | Pains in lower limbs became more severe after temperature became normal. |
| 6 | P.U.O. | Sudden onset with headache, vomiting, and pain in limbs. Lumbar pain, pains in shins and ankles, spleen palpable. | Continuous, 12 days. | Enterococcus in blood. | " | Febrile and focal reaction. | This patient had a second pyrexial period of 2 days after 3 days normal temperature.] |
| 7 | " | Sudden onset with headache, giddiness, pains in knees and shins. Furred tongue, drowsiness, slight bronchitis. | Continuous, 10 days. | Enterococcus in urine. | " | " | — |
| 8 | " | Gradual onset with headache and general pains. Abdominal pain, furred tongue, slight bronchitis, roseolæ eruption on chest, arms, and back. | Continuous, 28 days. | Enterococcus in blood. | " | Febrile and general reaction. | Pains in lower limbs on admission, disappeared in a day or two, and returned after temperature became normal. |
| 9 | Myalgia. | Gradual onset with headache and pains in back and legs. | Continuous. | — | Stock. | " | Had dysentery in Gallipoli. During his convalescence he developed his first attack of "myalgia." Present attack some months afterwards. |

TABLE II.—"TRENCH FEVER" TYPE.

| | | | | | | | |
|----|---------------|---|---|--|--------------|-----------------------------|---|
| 10 | Slight G.S.W. | Sudden onset with headache and malaise. | Intermittent 3 febrile periods. | Enterococcus in blood. | None. | — | The illness occurred after the wound had healed. |
| 11 | " | Sudden onset with headache, giddiness, and pains in lower limbs. | " | Enterococcus in urine. | Stock. | Febrile and focal reaction. | The illness occurred after the wound had healed. |
| 12 | Trench fever. | Sudden onset with headache, pain in lumbar region and legs. Herpes. | " | " | " | " | This patient was very ill and had several febrile attacks before admission to hospital. |
| 13 | Myalgia. | Sudden onset with headache, cough, general pains, abdominal tenderness, tenderness of shins. | " | Enterococcus in blood (twice) and in sputum. | Auto-genous. | " | — |
| 14 | Slight G.S.W. | Sudden onset with headache, vomiting, lumbar pains, and pains in shins. | " | Enterococcus in blood. | " | " | The illness occurred after the wound had healed. |
| 15 | Trench foot. | Sudden onset with headache, pain in shins and feet. | " | — | Stock. | " | — |
| 16 | P.U.O. | Gradual onset with headache and malaise. Suddenly became much worse with cough, vomiting, pains in chest and stomach. | Intermittent 2 febrile periods. | Enterococcus in blood. | Auto-genous. | " | Some pains in shins occurred after a dose of vaccine. |
| 17 | Myalgia. | Sudden onset with headache, pain in legs, abdominal tenderness. | Intermittent 3 febrile periods. | — | Stock. | " | — |
| 18 | " | Sudden onset with headache, malaise and fever. Lumbar pains, pains in knees and shins. | Intermittent 5 febrile periods. | — | " | " | Had pains in knees for 3 months previously. |
| 19 | " | Sudden onset with headache, shivering, and general pains. Pains in legs, especially shins. | Intermittent 2 febrile periods after admission. | Enterococcus in urine (twice). | Auto-genous. | " | — |

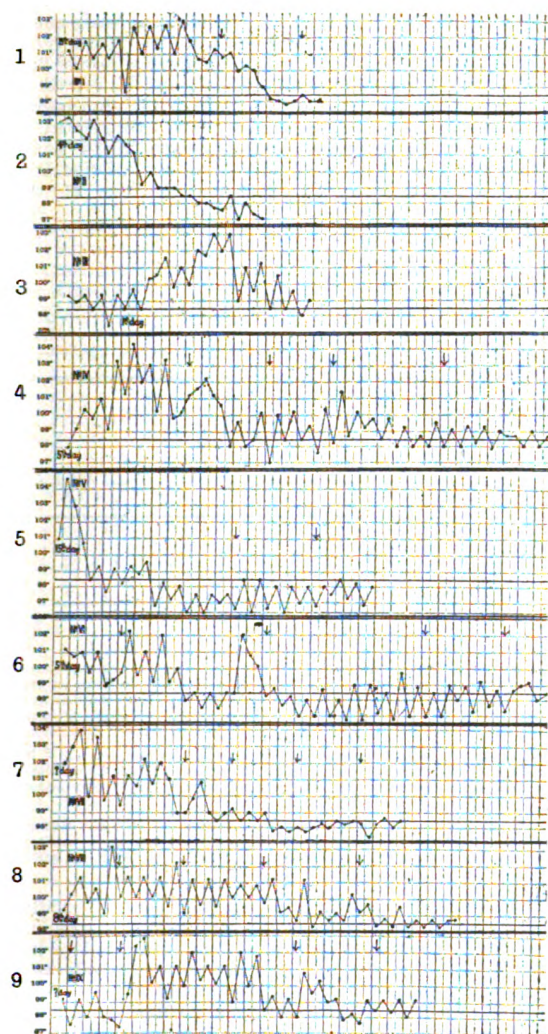
G.S.W. = Gunshot wound.

P.U.O. = Pyrexia of unknown origin.

TABLE III.—"MYALGIC" TYPE.

| No. | Original diagnosis. | Prominent symptoms. | Type of fever. | Evidence of infection. | Vaccine used. | Effect of vaccine. | Remarks. |
|-----|-----------------------|--|----------------|----------------------------------|--------------------------------------|---|--|
| 20 | Influenza. | Sudden onset with headache, pain and weakness in legs. Gastric disturbance and tenderness of shins. | Irregular. | Enterococcus in blood and urine. | Auto-genous. | Febrile and focal reaction. | Six days' pyrexia occurred 3 weeks after admission. |
| 21 | Trench foot. | Sudden onset with pain and swelling of feet and left hand. | " | Enterococcus in urine. | " | " | This case was characterised by some swelling of knee and wrist joints. |
| 22 | Myalgia. | Gradual onset with pain in right knee, ankles, and feet. | Afebrile. | " | " | Temporary relief after each inoculation. | Previous history of pains in limbs. |
| 23 | Peritoneal adhesions. | Sudden onset with headache, pains in knees and shins. Herpes. | Irregular. | Enterococcus in blood. | " | Febrile and focal reaction. | The myalgia developed after 5 days in hospital. |
| 24 | Myalgia. | Sudden onset, with pains in back and lower limbs. | " | Enterococcus in urine. | Mixed streptococcal and autogenous | No effect from either vaccine. | There was some swelling of right great toe. History of gonorrhoea. |
| 25 | " | Sudden onset with pain in shoulders, back, and shins. Frequency of micturition. | " | " | Auto-genous. | No effect. | " |
| 26 | " | Sudden onset with headache, pain in back and legs. | Afebrile. | " | " | Febrile and focal reaction. | " |
| 27 | " | Gradual onset with headache, pain in back and legs. Frequency of micturition. | " | " | " | " | " |
| 28 | " | Sudden onset with shivering, headache, pain in back and legs. | " | " | " | " | " |
| 29 | " | Sudden onset with loss of power and sensation from knees downwards. Pain in groin and erythema of feet. | " | " | " | Focal and general reaction. | " |
| 30 | Fever. | Sudden onset with headache, general pains, and diarrhoea. Pain and swelling of shoulder, feet, and legs. Frequency of micturition. | " | " | " | Febrile and focal reaction. | Some swelling of joints occurred in this case. History of rheumatism. |
| 31 | Myalgia. | Sudden onset with vomiting and diarrhoea. Pain in back and lower limbs. | Irregular. | " | " | Fall of temperature and general improvement. | " |
| 32 | " | Sudden onset with headache, pains in arms, legs, back, and stomach. Frequency of micturition. | " | " | Stock. | Febrile and focal reaction. | " |
| 33 | " | Gradual onset with shivering and pains in shoulders, arms, and legs. Tenderness of shins. | Afebrile. | " | Mixed streptococcal and auto-genous. | Mixed streptococcal had no effect. Temporary relief after each inoculation of autogenous. | " |
| 34 | " | Sudden onset with headache and pain in back and legs. | Irregular. | " | Auto-genous. | Marked improvement after each inoculation. | " |
| 35 | " | Sudden onset with headache and pain in back and legs. | " | " | " | Improvement after each inoculation. | " |
| 36 | P.U.O. | Sudden onset with headache, rigors, and pain in back, arms, and legs. Frequency of micturition. | Irregular. | " | Stock. | Febrile and focal reaction. | " |
| 37 | Colitis. | Gradual onset with headache and malaise. Pains in shoulders, knees, and ankles. Abdominal pain. Much mucus in stools. | " | " | Auto-genous. | " | Note abdominal symptoms. |
| 38 | Influenza. | Sudden onset with shivering, headache, pain in back, arms, and legs. Marked tenderness of shins. | " | " | " | Slight general reaction. | Vaccine treatment in this case was disappointing. |
| 39 | Myalgia. | Gradual onset with pains in legs. Pains in knees and arms. Tender ness and pains in shins. | " | " | " | Febrile and focal reaction. | Previous history of rheumatism. Constipation was absent in this case. An administration of a purgative produced a sharp rise of temperature. |
| 40 | Meningitis? | Sudden onset with headache and intense pain in spine. Extreme tenderness of muscles of back and legs. | " | Enterococcus in blood. | Stock. | " | Patient was seriously ill, and at first appeared like a case of meningitis. |

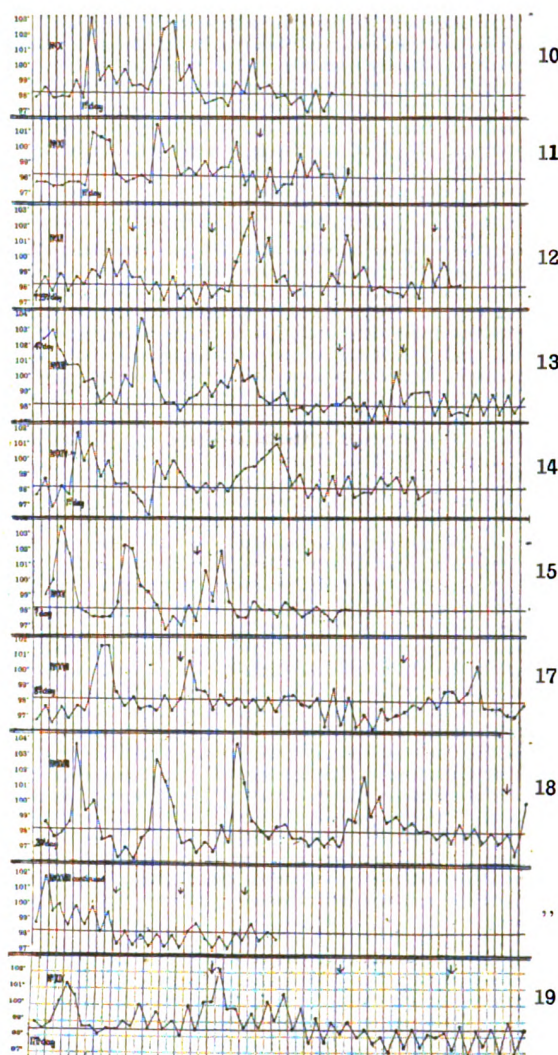
FIG. 1.—Charts of Septicæmic Type (Cases 1-9).



The arrows indicate the inoculation of vaccine.

- 1.—Septicæmic type. Diagnosis—Pericarditis. 24/9/15: Enterococcus isolated from urine. 26/9/15: Opsonic index—morning 0.4, evening 0.7. 27/9/15: First and second inoculations, 5 millions each.
- 2.—Septicæmic type. Diagnosis—Septicæmia. 27/11/15: Enterococcus isolated from blood and urine.
- 3.—Septicæmic type. Diagnosis—Slight G.S.W. 23/4/16: Enterococcus isolated from blood.
- 4.—Septicæmic type. Diagnosis—Influenza. 21/3/16: Enterococcus isolated from urine and sputum. 25/3/16: First inoculation, 2 millions. 30/3/16: Second inoculation, 2 millions. 3/4/16: Third inoculation, 3 millions. 10/4/16: Fourth inoculation, 3 millions.
- 5.—Septicæmic type. Diagnosis—Myalgia. 4/2/16: Enterococcus isolated from blood. 19/2/16: Opsonic index—1.7. 14/2/16: First inoculation, 2½ millions. 19/2/16: Second inoculation, 2 millions. This patient had "myalgic" pains for three weeks after his temperature became normal.
- 6.—Septicæmic type. Diagnosis—P.U.O. 25/3/16: Enterococcus isolated from blood. 25/3/16: 2 c.c. citrated blood from the patient were injected intravenously into a rabbit; 12 days later the animal developed stiffness and tenderness of its limbs. 25/3/16: First inoculation, 2½ millions, stock. 3/4/16: Second inoculation, 1½ millions, autogenous. 13/4/16: Third inoculation, 2½ millions. 18/4/16: Fourth inoculation, 2½ millions.
- 7.—Septicæmic type. Diagnosis—P.U.O. 22/1/16: Enterococcus isolated from urine. 25/1/16: First inoculation, 5 millions. 28/1/16: Second inoculation, 10 millions. 1/2/16: Third inoculation, 20 millions. 5/2/16: Fourth inoculation, 5 millions. A large dose of vaccine gave the patient a severe headache lasting for one week.
- 8.—Septicæmic type. Diagnosis—P.U.O. 1/5/16: Enterococcus isolated from blood. 4/5/16: First inoculation, 1 million. 8/5/16: Second inoculation, 1½ millions. 13/5/16: Third inoculation, 1½ millions. 19/5/16: Fourth inoculation, 2 millions.
- 9.—Septicæmic type. Diagnosis—Myalgia. Enterococcus not found. 30/4/16: First inoculation, 60 millions stock staphylococcus vaccine. No effect produced. 3/5/16: Second inoculation, 60 millions staphylococcus vaccine and 1½ millions stock enterococcus vaccine. Reaction produced. 14/5/16: Third inoculation, 2 millions enterococcus vaccine. Reaction produced. 19/5/16: Fourth inoculation, 90 millions staphylococcus vaccine. No reaction produced. This patient suffered from furunculosis in addition. The case illustrated the use of vaccines in diagnosis.

FIG. 2.—Charts of "Trench Fever" Type (Cases 10-15 and 17-19).



- 10.—"Trench fever" type. Diagnosis—Slight G.S.W. 6/4/16: Enterococcus isolated from blood.
- 11.—"Trench fever" type. Diagnosis—Slight G.S.W. 1/4/16: Enterococcus isolated from urine. 27/3/16: First inoculation, 2½ millions stock.
- 12.—"Trench fever" type. Diagnosis—"Trench fever." 23/4/16: Enterococcus isolated from urine. 7/4/16: First inoculation, 2½ millions stock. 12/4/16: Second inoculation, 3 millions. 19/4/16: Third inoculation, 1 million. 26/4/16: Fourth inoculation, 1½ millions. In this case it would appear as if the vaccine determined two of the pyrexial periods.
- 13.—"Trench fever" type. Diagnosis—Myalgia. 23/4/16: Enterococcus isolated from blood. 28/4/16: Enterococcus isolated from blood, also from sputum. 28/4/16: 2 c.c. citrated blood from patient were injected intravenously into a rabbit. Eight days later the animal developed stiffness and tenderness of its limbs. 2/5/16: First inoculation, 1 million. 10/5/16: Second inoculation, 1½ millions. 14/5/16: Third inoculation, 2 millions.
- 14.—"Trench fever" type. Diagnosis—Slight G.S.W. 30/4/16: Enterococcus isolated from blood. 14/5/16: Opsonic index, 1.2. 8/5/16: First inoculation, 1½ millions. 12/5/16: Second inoculation, 1½ millions. 17/5/16: Third inoculation, 2½ millions.
- 15.—"Trench fever" type. Diagnosis—"Trench fever." Enterococcus not found. 30/11/15: First inoculation, 5 millions, stock. 7/12/15: Second inoculation, 2½ millions. The third pyrexial period seemed to be determined by the vaccine.
- 17.—"Trench fever" type. Diagnosis—Myalgia. Enterococcus not found. 15/3/16: First inoculation, 2½ millions, stock. 29/3/16: Second inoculation, 5 millions.
- 18.—"Trench fever" type. Diagnosis—Myalgia. Enterococcus not found. 23/5/16: First inoculation, 1 million, stock. 29/5/16: Second inoculation, ½ million. 2/6/16: Third inoculation, 1 million. 6/6/16: Fourth inoculation, 1 million. In this case the vaccine had a decided effect upon the temperature and general condition of the patient. The first dose was followed by a rise of temperature and aggravation of the symptoms. After the second dose the temperature fell to normal and the pains disappeared. The third and fourth doses produced slight rises of temperature and transient return of the pains.
- 19.—"Trench fever" type. Diagnosis—Myalgia. 22/4/16: Enterococcus isolated from urine. 24/4/16: Enterococcus isolated from urine. 1/5/16: First inoculation, 2½ millions. 9/5/16: Second inoculation, 2½ millions. 16/5/16: Third inoculation, 2½ millions.

of a myalgic character may develop and a sudden rise of temperature may occur. All the cases of this group were fully investigated for possible infection with typhoid and paratyphoid organisms, and the results of these investigations were uniformly negative. That the enterococcus was the infective agent in these cases appears from the following. It was found in the blood in 5 cases, and in 4 it was isolated from the urine, and in 1 case it occurred in the sputum. In 7 of the cases treated with vaccines the effects were quite definite—namely, there was reaction followed by improvement. (See Fig. 1.)

2. "Trench Fever" Group (Table II.).

This group contains cases of a similar character to those described as "trench fever" by various writers. McNee, Renshaw, and Blunt divide cases of this nature into two clinical types: "(a) a short fever of about a week's duration, followed frequently after a few days by a short single relapse, and (b) a longer illness characterised above all by the number, character, and periodicity of the relapses"—and give reasons for believing that both are due to the same infective agent. Although many of our cases could be placed in one or other of these divisions, some do not accurately conform to this simple classification. The onset is abrupt, as in the septicæmic type, and the early symptoms are similar but of rather less severity. The fever is not continuous, but intermittent in character. There may be only one febrile period or as many as five, possibly more. The periods of pyrexia are of brief duration, usually two or three days; but the initial period, rarely seen in a base hospital, may be longer. The febrile periods are characterised by headache, loss of appetite, sweating, and pains in the back and lower limbs. The pains are often especially severe in the shins and associated with marked tenderness. During the apyrexial periods pains are usually absent, but in some cases they persist. A few cases have been observed in which pains are absent during the entire course of the illness, the only symptoms being intermittent fever, headache, and malaise. Bacteriological investigation of these cases demonstrated the presence of the enterococcus in the blood of 3 of the patients, in the urine of 3, and in the sputum of 1, while in the remaining 3 the organism was not found. All the cases in this group except No. 10 were treated with enterococcus vaccine and definite reactions were observed in every instance. (See Fig. 2.)

3. "Myalgia" Group (Table III.).

This group contains the largest number of cases of enterococcal infection which have been investigated. The majority of these patients never suffered from any rheumatic condition before. The onset and initial symptoms are the same as in the previous groups. There is, however, only one period of pyrexia, lasting from a few days to a week. These patients do not, as a rule, reach the base hospital until the fever has almost or completely subsided. The most striking feature in this class of case is the persistence of pains during the afebrile period. The pains are usually localised, being confined to the lumbar region and lower limbs, the shins especially are painful and tender. Periods of exacerbation in the intensity of the pains occur; they are also usually worse at night and in cold, damp weather. During one of these periods there may be a sudden rise of temperature, which suggests a close relationship between this group and those previously described. The pains may persist for several weeks after the temperature has returned to normal. Three charts which show some divergence from the usual apyrexial character are given. The enterococcus was found in both the blood and urine in 1 case, in the blood of 2, and in the urine of the remaining 18 cases. All of the patients were treated with vaccines, usually autogenous, and a study of the results gave additional evidence of infection with this micro-organism. (See Fig. 3.)

Bacteriology.

The enterococcus is a constant inhabitant of the normal bowel. It differs from all other streptococci by the ease with which it is grown on ordinary laboratory media and by its greater power of resistance—that is, cultures of it survive longer and are more difficult to kill. In preparations made from pus it appears almost invariably as a lanceolate diplococcus. It stains easily and is Gram-positive. It grows well on all ordinary laboratory media under both aerobic and anaerobic conditions.

On agar it forms a fine growth, not unlike that of streptococcus pyogenes, but the individual colonies are larger and more opaque, and when a heavy implantation is made there is a greater tendency to produce a uniform film. On trypsin agar, introduced by Douglas, it grows luxuriantly, resembling cultures of staphylococci on ordinary agar, and its growth is much more rapid than that of an ordinary streptococcus, being distinctly visible in four or five hours. On gelatin, at room temperature, it forms a white growth in 24 hours and does not liquefy the medium. On Conradi-Drigalski's medium it grows well; in 24 hours the size of the

FIG. 3.—Charts of Myalgic Type (Cases 20, 23, and 40).



20. "Myalgic" type. Diagnosis—Influenza. 15/2/16: Enterococcus isolated from blood and urine. 15/2/16: 2 c.c. citrated blood from patient were injected intravenously into a rabbit; 18 days later the animal developed pain and stiffness of its limbs and neck. 16/2/16: Oponic index—morning 1.2, evening 1.5. 23/2/16: First inoculation, 2½ millions.

23. "Myalgic" type. Diagnosis—Peritoneal adhesions. 24/4/16: Enterococcus isolated from blood. 1/5/16: First inoculation, 2½ millions. 9/5/16: Second inoculation, 2½ millions. 16/5/16: Third inoculation, 2½ millions.

40. "Myalgic" type. Diagnosis—"Meningitis"? 28/5/16: Enterococcus isolated from blood. 3/6/16: First inoculation, 1 million. 11/6/16: Second inoculation, 1 million. 18/6/16: Third inoculation, 1 million.

individual colonies is intermediate between those of bacillus coli and an ordinary streptococcus, and the medium becomes red. In cultures on this medium, examined microscopically, the organism is found almost exclusively as a lanceolate diplococcus, short bacillary forms are also seen, but chain formation is absent. This medium is of great value in isolating the enterococcus from pus and other material containing a variety of bacteria, as it inhibits the growth of many organisms, including staphylococci. In broth the enterococcus grows well, producing a uniform turbidity, and forming comparatively short chains and diplococci. In milk it grows fairly well, assuming chiefly the diplococcal form, and the medium is coagulated in about three days. The character of its growth in serum has been fully described by Sir Almroth Wright, who has pointed out its serophytic properties. Its action on the following sugars—the only ones available—was tested. It rapidly ferments glucose, lactose, and saccharose, more slowly salicin; no change in mannite could be demonstrated in one week.

Its resistance to heat is remarkable. A thick emulsion of the coccus in broth or physiological saline solution contained in a test tube was found in numerous experiments to be alive after an exposure for one and a half hours to a temperature of 55° C. The heat-resisting properties of the enterococcus formed the basis of a method for isolating the organism from pus, faeces, and sputum. An emulsion of any of these materials in broth was incubated in a test-tube at 37° C. for several hours, and then exposed to a temperature of 55° C. for a period of from half an hour to one hour in the vaccine steriliser. Loopfuls of the emulsion were then plated out on Conradi-Drigalski's medium and the plates incubated for 24 hours.¹ Cultures of the coccus are emulsified with great ease in physiological saline solution, and in this respect the organism contrasts markedly with other streptococci.

¹ This method was applied to samples of mud obtained from the boots and clothing of patients on admission to hospital, and the enterococcus was isolated without difficulty from all the specimens examined.

To establish the relation of an organism recovered from the body to a diseased condition is one of the most important and most difficult problems of modern medicine. A number of the methods which have been devised for this purpose have been applied to the enterococcus. Many experiments were made with different sera in order to ascertain whether the character or rate of growth of the coccus in serum would form a reliable means of distinguishing infected from non-infected persons. It was found, as Wright has pointed out, that differences do occur; in the serum of some cases of infection the coccus grew more quickly and in others more slowly than in normal serum, but the differences were not sufficiently constant or sharply marked to render the method of general application in the diagnosis of infection.

Experiments in agglutination were frequently done. The coccus was found to be agglutinated to a greater extent by infected than by normal serum, but the differences were too small to be of definite value, and this method was also abandoned. Complement deviation tests received a limited trial, but neither did they furnish satisfactory criteria. Evidence of infection was therefore based upon the following—the isolation of the organism from various sources, such as blood, wounds, urine, sputum; the results of opsonic index determinations; and the effect of vaccines used as diagnostic and therapeutic agents.

1. *The isolation of the organism from various sources.*—(a) *The blood.*—As a rule, 20 c.c. of blood were collected aseptically from a vein in the arm. This blood was distributed as follows: 5 c.c. in a flask containing 50 c.c. broth, 5 c.c. in a flask containing 50 c.c. broth and 10 c.c. bile, and 10 c.c. in a test-tube containing $\frac{1}{2}$ c.c. of Allen and Hanburys' compound solution of trypsin. These were incubated and examined from day to day for five days by film and plate methods. The following table gives the results of all blood cultures done in the hospital up to the present date:—

| | | | |
|-----------------------|----|----------------------------|-----|
| Sterile | 85 | Tetragenus | 3 |
| Enterococcus | 20 | Bacillus: Non-lactose fer- | 1 |
| Paratyphoid B | 2 | menter, not identified ... | — |
| Streptococcus | 4 | | |
| Staphylococcus | 6 | Total | 121 |

—that is, the enterococcus was present in 16 per cent. of all blood cultures done. Blood culture is a very valuable method of diagnosis when positive results are obtained, but it is disappointing that in many cases of apparent septicaemia no organism is found. It has been observed, especially in cases of myalgia, that one is more likely to obtain positive results if blood cultures are made at the beginning of the pyrexial period. This observation is interesting, as in the enteric group of diseases the infecting bacillus is rarely obtained from the blood after the first week of illness.

(b) *Wounds.*—The method adopted to determine the presence of the enterococcus in wounds was as follows: The pus was plated out on agar and on Conradi-Drigalski's medium and tubes of broth and of milk were also inoculated. After 24 hours' incubation, growths, if any, were examined microscopically, and the presence or absence of the enterococcus determined. In cases of doubt as to the nature of growths resembling the enterococcus the pus was also examined by the pyo-sero method of Wright and by the heat test above described. The following table gives the results of the routine examination of wounds:—

| | |
|--|-----|
| Enterococcus alone present | 5 |
| Enterococcus with other micro-organisms | 41 |
| Enterococcus not found | 64 |
| Total | 110 |

—that is, the enterococcus was found to be present in 41 per cent. of infected wounds.

(c) *Urine.*—The method employed with urines was as follows. The orifice of the urethra was cleansed with antiseptic lotion and the patient asked to pass urine. Some of the middle of the stream was received direct in two sterile test tubes. Specimens thus collected were incubated at 37° C. for several hours, and then loopfuls of the deposit plated on agar and on Conradi-Drigalski's medium. The two common methods of collecting specimens of urine for bacteriological examination—namely, catheterisation and the method described above are open to criticism. In both

contaminations from the urethra may occur. In the first, if micro-organisms are present in the urethra it is practically impossible to avoid carrying them into the bladder on the catheter. In the second, urethral organisms may be washed out by the stream of urine. As all the patients whose urines were examined were males the method above described, being the simpler, was adopted. The following are the results of the examination of 543 urines:—

| | | | |
|-----------------------------|-----|--------------------------------|---|
| Sterile | 124 | Staphylococcus and B. coli ... | 3 |
| Staphylococcus | 184 | Staphylococcus and various ... | 8 |
| Enterococcus | 66 | Enterococcus and various ... | 1 |
| Streptococcus | 39 | Streptococcus and B. coli ... | 2 |
| B. coli | 13 | Streptococcus and various ... | 2 |
| Various | 24 | Enterococcus and B. coli ... | 3 |
| Staphylococcus and entero- | | Staphylococcus, B. coli, and | |
| coccus | 28 | enterococcus | 1 |
| Staphylococcus and strepto- | | Staphylococcus, B. coli, and | |
| coccus | 44 | streptococcus | 1 |

The enterococcus was present in 18 per cent.

The presence of micro-organisms in the urine is of varied significance. Staphylococci often occur, streptococci less frequently without any importance being attached to their presence. If, however, the tubercle bacillus, a bacillus of the enteric group, or the micrococcus melitensis be found there is presumptive evidence of a definite infection. Our experience with the enterococcus appears to show that when the organism is found in urine it is frequently an infecting agent. It may be, however, that its presence in urine is not always of pathogenic significance, and in absence of confirmatory evidence of infection undue weight should not be attached to the discovery of the coccus in the urine.

(d) *Sputum.*—When examining films of sputa an organism morphologically resembling the enterococcus was sometimes observed. It was also noticed that in certain cases treated with enterococcus vaccine a reaction of such a nature occurred as to suggest the possibility of the presence of this organism in the sputum. Having discovered by the heat test that the enterococcus sometimes occurs in sputum, this method of examination was applied to 23 sputa from cases of several different diseases, and the organism was found in 8. In these 8 cases there was other evidence of infection with the coccus.

2. *Result of opsonic index determinations.*—The determination of the opsonic index is the only laboratory method of general application for ascertaining whether a micro-organism isolated from the body is infecting the patient. In a number of the cases described opsonic determinations were made and evidence of infection with the enterococcus found.

3. *Vaccines in diagnosis.*—Until a month ago autogenous vaccines were used in practically every case where the organism was found. Latterly stock vaccines prepared from a number of strains have proved equally useful. The employment of vaccines as a method of diagnosis is to some extent comparable to the use of tuberculin for this purpose. Our practice was to give small doses—2½ millions or less—as many of the patients were found to be extremely sensitive. The vaccine being used therapeutically as well as diagnostically, the effect of a series of inoculations could be observed, and it was generally possible to form an opinion as to whether the vaccine employed was the correct one or not; in other words, whether the enterococcus was an infecting organism in the case under consideration. A febrile or general reaction following an inoculation, especially if associated with a focal reaction, is evidence that the organism from which the vaccine is made is at least one factor in the patient's illness. The more acutely ill the patient is the more sensitive is he to the correct vaccine. In febrile cases marked reactions are undesirable, but the course of the temperature in such cases is often extremely suggestive and may, in conjunction with other evidence, justify a definite conclusion.

As the course of the illness in many of the cases under consideration was prolonged and the duration of the patient's stay in this hospital seldom exceeded a few weeks, it was impossible to put the patients on a full course of vaccine therapy. The limited treatment, however, which they received appeared to be of decided benefit. When the immediate reaction following a dose of vaccine had passed off the pains were usually much relieved and the general condition of the patient improved.

THE DIAGNOSIS OF TUBERCULOSIS BY TUBERCULIN.

A STUDY IN TECHNIQUE.

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THE question of the early recognition of active tuberculosis is so important that any investigations which tend to make it easier or more definite should appeal equally to the general practitioner and to the specialist. It is generally recognised that the cure of most cases of active tuberculosis in its early stages is quite an easy matter given the necessary time and opportunity. Cure is understood to mean the general raising of the resistance of the system in relation to the tuberculous virus, so that the virus does not either endanger life or by its presence interfere with comfort or health. The early curability being admitted, the earliest possible recognition naturally becomes a question of paramount importance.

When this investigation into the early recognition of tubercle by means of tuberculin was commenced the postulates which were considered as proved were: First, that the action of tuberculin was specific in the case of tuberculous infection—in other words, a similar reaction could not be produced by any other agency than the tubercular virus itself or its products; secondly, that a reaction was considered to prove that the tubercle bacillus had been present in the organism at some time or another; and, thirdly, that the tubercular virus could be present without there being active disease.

Evidence has accumulated to a convincing amount that by far the greater portion of the population has at some time or another of their career been infected with the tuberculous virus, but in most cases it has not caused any injury, and its presence cannot be detected except with the aid of tuberculin. A minority of those infected suffered from what is called in this article active tuberculosis; the remainder, in all probability stimulated by the presence of the tubercular organism itself, have no doubt acquired a certain amount of immunity by which subsequent infections are satisfactorily controlled without any injury or without even any cognisance of its existence.

Accepting as a fact that the tubercular reaction is specific, there are five ways in which it can be obtained in order to arrive at a diagnosis. They are: (1) Koch's method, subcutaneously applied to the organism generally; (2) von Pirquet's, applied to the mucous layer of the skin; (3) Moro's ointment, superficially; (4) Calmette's, to the mucous membrane of the eye; and (5) Martoux's intradermal reaction. One and all yield positive results where the organism had been in contact with the virus. They have not obtained general acceptance because they are too sensitive—have proved too much—producing definite reactions in many cases that were evidently not suffering at all from active disease. That was the position when these investigations were begun some four years ago, and I have not yet seen whether multi-Pirquet, subsequently introduced, has been standardised or not.

It appeared to me at the time absurd for our modern spirit of investigation to abandon a definite method of acquiring information in so important a disease simply because the test was too sensitive, for that was really the position when the objections to the tests were brought down to bedrock. The main reason that tuberculin is not universally used as the test for tuberculosis is that too many respond. It is true the subcutaneous method was not used by some because it was considered too dangerous. I, in the main, agree with this conclusion. A simple von Pirquet is too delicate; in fact, it is useless for anything but a negative test. From what I have seen of Koch's subcutaneous method in the hands of persons inexperienced in the use of tuberculin it would be dangerous if indiscriminately applied. Of Calmette's and Moro's I have too little experience to speak authoritatively, save to say that I was unwilling to use Calmette's in my earlier investigations on account of the definite precautions necessary in its use. The attitude then taken has been confirmed in the light of subsequent knowledge. The result of a series of investigations which I hope

to record at a later period leads me to the belief that the application of the eye test in general practice by those unacquainted with tuberculin is questionable.

This being the position as far as I was aware of it when these investigations were first started, the first thing that appeared necessary to settle was whether tuberculin reaction was confined to any one tissue or whether its effect was equally general to all tissues. It was definitely recognised that the reaction was threefold: (1) local, at the seat of the application; (2) focal, at the seat of the disease; and (3) general, in the constitutional disturbance resulting; but I was uncertain what definite tissues reacted except those tubercularly infected.

The first reaction investigated was naturally the local, and the investigations were carried out in the Coolgardie Sanatorium in Western Australia, an institution with 90 beds, where I had to treat all varieties of cases sent in by the Government without personal selection.

In investigating the skin reaction the first layer tested was the mucous layer, the one on which von Pirquet operated, as he specifically mentions that blood should not be drawn. Von Pirquet says: "The scarifier used is a chisel-shaped point of platinum-iridium about one-sixteenth of an inch in width. It is held vertical to the skin and rotated. The amount of abrasion should be such that the control spot shows a scab the next day, *but blood should not be drawn.*" To separate this layer from the other with a view to investigation of the results blister plaster was used. It required a little care to produce a blister of the right size and consistency, so that the secreted fluid could be withdrawn and various quantities of tuberculin substituted without breaking the covering. The various dilutions were not at this time being accurately investigated, but the question whether the mucous layer was the layer responding or not was very soon settled.

The procedure ultimately adopted was to raise a blister with a plaster about the size of a threepenny-piece, the plaster being applied eight hours before the injection was made, then by means of a fine needle inserted through the uninjured skin the fluid of the blister could be easily withdrawn and the tuberculin dilution substituted for it. This carefully done could be accomplished without bursting the blister. The puncture point was then sealed with collodion and the results noted. No local reaction was obtained by this means at all, although both focal and general reactions were obtained. In fact, this method was used later as a means of conveying tuberculin into the organism. It was found in many cases that tuberculin could be used in this manner beneficially where the organism was otherwise too sensitive to injection. The valuable feature of the process is the slow rate of absorption, as it takes two to three days for the blister to be absorbed. During both the original investigations and later experiments when using the blister for inoculation purpose I do not think any definite local reaction was ever obtained. It must be remembered that in these cases very concentrated tuberculins were not obtained because there was a certain amount of dilution with the blister fluid remaining.

The next layer to be investigated was the papillary layer of the skin in which the smaller blood-vessels run, and it was very soon manifest that the papillary layer, at any rate whatever other layers were involved, was keenly sensitive to the tuberculin reaction. I have never satisfactorily demonstrated whether this is due to the cutaneous elements of that layer or whether it is due to the connective tissue, as there was no means of section-cutting, and if there had been the necessary skill would have been in question. However, the general impression obtained was that the epithelial element was the one involved. This opinion was arrived at mainly by the needle-point reaction, which, it is admitted, is the most sensitive tuberculin reaction which exists, and also by a series of investigations in which the skin was penetrated from below, the needle being first driven through the skin and then carried up again to the lower epidermic layers after passing through the subcutaneous tissues. That there is some reaction in the deeper layer is undoubted, because there is frequently a general swelling produced even by comparatively small doses. But this appears to be by no means as sensitive as the superficial or papillary layer. Further evidence that the epithelial element is the one

¹ Handbuch der Technik und Methodik der Immunitätsforschung, von Kraus und Levaditi, p. 1035 (1908).

involved could be produced from certain lupus reactions, but that belongs to their special investigation and would take too long to detail here. Incidentally, the fact that the specific reaction takes place in the deeper epithelial layer explains to a large extent the erratic results obtained by von Pirquet's superficial cutaneous method, as when the papillary layer was accidentally injured much more definite results would be obtained than when it was uninjured.

These observations led to the adoption of the method detailed in this paper called the papillary cutaneous method (or shortly P.C.) and multi-papillary cutaneous (or M.P.C.) when various dilutions are used. This is done to distinguish it from von Pirquet's or the mucous cutaneous method. It soon became evident that the original solution (O.T.) produced results far too numerous to yield any reliable conclusions, as it undoubtedly gave a reaction in many cases where no sign of active disease existed.

Tubercular cases have to be divided into two classes, active and passive, with the intermediate stages travelling in each direction, active passive and passive active, signifying that the case is either passing from an active state to a passive and not definitely either or from passive to active. When cases are passing into an active condition the battle is naturally going in favour of the virus.

The observations recorded here are the outcome of the study of over 700 cases to which the method has been applied. The cases actually recorded are the last 500 which have been dealt with since my appointment as tuberculosis medical officer at Middlesbrough. These have been done in rotation as they present themselves, and they are all recorded.

As every case has to come to me through another practitioner, there must naturally have been some presumption in favour of tuberculosis before they came into my hands. The children recorded were mostly sent by the school medical officer (Dr. H. M. Gay), who sends in every doubtful case for investigation. He has examined so far some 8000 cases. Three-fifths of the cases here recorded are children, and in their case the probability of tuberculosis was not so great on account of their routine method of selection. This is amply borne out by the figures, as the children gave 74 absolute negatives in the 333, whereas the adults only gave 6 in 167.

P.T.O. is used for the first mark "I" or original solution mark. O.T. is used for all the others. The dilutions of T. used are 1 in 10, 1 in 100, 1 in 500, 1 in 1000, and 1 in 10,000. The diluent used is that in general use—normal saline and $\frac{1}{2}$ per cent. carbolic acid. For the purpose of record they are labelled in the following way:—

| | | | | | | |
|------|-----|-----|-----------------|-----|-----|-----------------------|
| I. | ... | ... | Original P.T.O. | ... | ... | Earlier cases were T. |
| II. | ... | ... | 1 in 10 | ... | ... | Old tuberculin T. |
| III. | ... | ... | 1 in 100 | ... | ... | " " |
| IV. | ... | ... | 1 in 500 | ... | ... | " " |
| V. | ... | ... | 1 in 1000 | ... | ... | " " |
| VI. | ... | ... | 1 in 10,000 | ... | ... | " " |

Diluent: Normal saline and $\frac{1}{2}$ per cent carbolic acid.

The cost of a bottle of 1 c.c. of T. or P.T.O. is about 6d., sufficient for six cases when done individually. All the dilutions can be made with a good tuberculin syringe graduated in tenths, a bottle of old tuberculin, and a bottle of diluting fluid. If it is desired to do a "I." a bottle of P.T.O. as well is necessary. Supposing T. is used all through, a little more than a tenth of a c.c. is taken into the syringe first and a small drop is placed on the forearm sufficient to bring the syringe up to the tenth mark. That makes the original or "I." which is then scarified. The syringe is then filled with the diluting fluid to the top, leaving, however, a bubble to ensure it mixing. The needle is then wiped with cotton-wool, and the bubble moved up and down and a few drops discarded, then another drop placed on the arm just below the previous one, and then scarified, which makes "II." or the 1 in 10 mark. The syringe is then emptied to the tenth mark and a further fill of diluting fluid made with the bubble as before. This procedure makes the "III." mark or 1 in 100. For the "IV." mark the syringe is emptied to its tenth mark, and is then refilled, but this time only half way, making the "IV." or 1 in 500 dilution, and after the scarification it is filled completely with diluent without emptying anything out, making the "V." or 1 in 1000. In the last or the "VI." dilution it is emptied to the tenth mark, and filled up as in the earlier marks. The diluting solution is then used for the control. The needle must be wiped every time, and after mixing a few

drops forced out to ensure no contamination or dilution. The needle often contains as much as 1/100 c.c., which can be easily verified by emptying the syringe, then drawing back the piston, and seeing how much fluid remains in the syringe. When P.T.O. is obtainable it is better to do the original with it, or if the case is suspected of being sensitive "I." should be omitted altogether, remembering to record the first mark as "II."

For use on a large scale six little bottles are requisite with a drop-stopper drawn to a fine point, so that a small amount can be easily deposited on the left forearm, the place invariably used as most convenient. The skin in the higher part is insensitive and at the same time fairly thin, the sensitiveness increasing as the wrist is approached. If the marks are properly placed they occupy a line under 2½ inches in length, which should be in the upper two-thirds of the forearm.

The original solution which was used at the commencement of these experiments for mark "I." was T.—Koch's original tuberculin—but as it gave such high reactions it was ultimately discarded for P.T.O., as that was found to be safer. Since P.T.O. was used at the original "I." mark there have been no excessive local reactions. It is true that this somewhat interferes with the sequence, as T. is used for all the other dilutions, but the safety more than compensates. In fact, my present advice is to drop T. for the original altogether as unnecessary except when an absolute negative is required.

The method of procedure is as follows. At each mark a drop of the dilution required is placed on the forearm, commencing at the elbow—1 minim is all that is necessary. Then, using a vaccinating lancet, with a round, very sharp point, a few quick movements are made through the drop and the superficial layer of the epidermis, about one-quarter of an inch long. The blood does not often appear until after the scarification at that mark has been finished. The lancet is wiped, and the same proceedings carried out with another dilution at a lower spot. The six dilutions are generally used, and the control, making seven in all. The essential points are that the bleeding layer must be penetrated, the scratch must be made through the solution, and the knife must be wiped so as not to carry any solution over to the next dilution and so vitiate the results. The lancet must be properly sharp, and there must be at least five small scratches alongside each other at each mark or the result is unreliable.

The whole is then covered with a small strip of absorbent wool over which a piece of gauze is placed, and the pad is retained in position for two days by a couple of narrow strips of zinc adhesive plaster round the arm. It causes no inconvenience or discomfort to the patient, though the procedure sounds rather dreadful; babies of 1 year of age do not even cry while it is being done. The whole process takes under two minutes, and there is no discomfort afterwards; in fact, they hardly know that anything has occurred. It is wise to tell the patients that the procedure is performed for the doctor's information, not to cause any reactions in them.

Sir William Osler has said somewhere that if tubercle throughout its active stages caused pimples to appear on the nose the disease would be more easily controlled, as it would be recognised quite early and attended to by the sufferers. This procedure might easily be considered to be the pimples.

Most medical men will find the moment for taking off the bandages at the end of the second day one of great interest, as the condition of the patient is then displayed before those who know how to read the results. When the bandage is removed the reaction will be found to display the following features. If the reaction is acute the marks will be red and swollen in a series diminishing with the strength of the solution and the activity of the case. The next characteristic will be the disappearance of the cut marks in contrast with the control; the swelling may be quite considerable, and is best appreciated by running the finger down the line of marks when it will be possible readily to recognise the mark at which the swelling disappears. Running the top of the thumb across each alternate mark is also a good way.

The colour varies in two directions from what is considered as normal reaction—about the colour of the lips. The brighter it is the more active and recent is the tubercular attack. When the swelling is considerable the colour is driven out of the mark itself, and it assumes a lighter,

oedematous appearance, suggesting a tendency to blister, and the bright colour reaction invades the neighbouring skin, sometimes to quite a considerable distance. When the swelling is slight or absent the colour of a reaction is much darker and is often delayed in appearance, in which case it is advisable to see the case again in three days and seven days before arriving at a definite conclusion. A darker reaction usually means an old infection. It may be so dark as to be nearly black, and that means that the case is old, quiescent, or one going to the bad with little or no resistance. The general condition of the patient will easily decide which of the two readings is to be recorded. In these cases there is little or no swelling. These colour reactions are being at present investigated and will be reported on later.

When investigating a reaction the points to be noted are: (1) The number of reactions, being the number in which the cut marks have disappeared; (2) the amount of swelling at each mark and the mark number at which the swelling disappears; (3) the character of the colour of the reacting marks; (4) the date of the colour appearance and disappearance; and (5) the mark number at which the colour disappears.

Another point which it is necessary to remember when reading the results of the test is that all considerations have to be taken into account and the balance weighed up. M.P.C. is reliable; but even then, the general condition of the patient must be considered in relation to the result obtained by the M.P.C. to arrive at anything like accurate conclusions.

In reviewing my early cases, the first thing that impressed me was the very large number that responded to the very high dilution of 1 in 1000 and 1 in 10,000—"V." and "VI." in the scale—and from my present knowledge I should expect reactions would occasionally be obtained from 1 in 100,000 and 1 in 1,000,000 if those dilutions were used, "VII." and "VIII."

The next general observation is that the number of marks in the cutaneous reaction does not correspond with the amount of tissue infected by tubercle, and neither does the cutaneous reaction correspond with the effect of tuberculin in focal or general reactions, but the M.P.C. results vary with a quite different set of conditions, which I call the curve of the M.P.C. reaction. The number of marks responding varies with two factors, the amount of tissue involved and the duration of the disease. It is more acute according as the activity of the disease is more recent. In regard to the amount of tissue infected by tubercle in relation to the number of marks reacting: the number of marks reacting increases very rapidly at first in proportion to the amount of tissue, but soon, however, reaches a maximum, and this with a very moderate amount of tissue infection; then with a further increase of the amount of tubercular infection the number of marks and amount of reaction to M.P.C. continue to diminish until no local reaction at all occurs when a large amount of lung is infected. Incipient cases involving only one lung focus give a "I." or "II." reading. Probably the amount of lung yielding a "VI." reaction would be a very small fresh patch, just definitely detectable by the stethoscope at one or both apices, and covering at most an area of 2 inches, larger areas and older disease giving fewer reactions. The usual moderate area gives "III." or "IV." on the descending scale, having passed their most sensitive condition; a large area gives "I." and "II." and very advanced cases give no reaction at all.

This creates the interesting position that any reaction may be on the ascending or descending line of the curve and may be due to an active-passive or a passive-active change, and consequently the question on which side of the curve the mark is has a very definite signification. By comparing photographs at the commencement and end of a course of tuberculin it was shown that the reactions were much diminished by the injections, a case yielding a "VI." reaction at the commencement of a course of tuberculin at the end would be "III." or even "II." and the acuteness of the swelling and colour of reaction were similarly reduced. This is, of course, in line with previous observations.

It might again be emphasised that the reading of the reaction has to be taken in conjunction with the other symptoms. M.P.C. can never constitute the whole diagnosis, but it easily yields half the available information; the other half still remains as essential as it ever was.

Chart of 500 Cases.

| | 1st 100 | 2nd 100 | 3rd 100 | 4th 100 | 5th 100 | Group totals. | % to total 500. | % to age Ad. 161 Ch. 249 | % to group total. |
|---|------------|------------|------------|------------|------------|------------------|--------------------|--------------------------------|-------------------------|
| Negatives— | | | | | | | | | |
| Adults... | 2 | 1 | 1 | 2 | 0 | 6 | 1.2 | — | — |
| Children... | 11 | 20 | 7 | 21 | 25 | 84 | 16.8 | — | — |
| Total... | 13 | 21 | 8 | 23 | 25 | 90 | 18.0 | — | — |
| CLASS I. AND II.—Reacting to original and 1 in 10. | | | | | | | | | |
| Adults— | | | | | | | | | |
| Slight lung... | 7 | 4 | 4 | 3 | 3 | 21 | — | — | 49.0 |
| Adv. lung re- covering... | 0 | 0 | 2 | 0 | 0 | 2 | — | — | — |
| Dying... | 5 | 4 | 7 | 1 | 3 | 20 | — | — | 46.5 |
| Total adults... | 12 | 8 | 13 | 4 | 6 | 43 | 8.6 | 26.6 | — |
| Children— | | | | | | | | | |
| Slight lung... | 11 | 8 | 6 | 6 | 8 | 39 | — | — | 66.0 |
| Adv. lung... | 3 | 2 | 4 | 1 | 0 | 10 | — | — | 16.0 |
| Various... | 1 | 2 | 4 | 2 | 1 | 10 | — | — | 16.0 |
| Slight glands... | 0 | 0 | 0 | 0 | 0 | 0 | — | — | — |
| Total children... | 15 | 12 | 14 | 9 | 9 | 59 | 11.8 | 23.6 | — |
| CLASS III. (?)—Reacting to 1 in 100. | | | | | | | | | |
| Adults— | | | | | | | | | |
| Slight lung... | 3 | 3 | 3 | 2 | 2 | 13 | — | — | 65.0 |
| Interm. lung... | 0 | 0 | 0 | 2 | 0 | 2 | — | — | — |
| Adv. lung... | 1 | 1 | 2 | 1 | 0 | 5 | — | — | 25.0 |
| Total adults... | 4 | 4 | 5 | 5 | 2 | 20 | 4.0 | 12.5 | — |
| Children— | | | | | | | | | |
| Slight lung... | 4 | 4 | 6 | 2 | 2 | 18 | — | — | 78.0 |
| Adv. lung... | 0 | 0 | 0 | 0 | 0 | 0 | — | — | — |
| Slight glands... | 1 | 1 | 2 | 0 | 1 | 5 | — | — | 21.0 |
| Total children... | 5 | 5 | 8 | 2 | 3 | 23 | 4.6 | 9.3 | — |
| CLASS III. AND IV.—Reacting to 1 in 100 to 1 in 500. | | | | | | | | | |
| Adults— | | | | | | | | | |
| Slight lung... | 3 | 4 | 10 | 6 | 7 | 30 | — | — | 41.0 |
| Interm. lung... | 4 | 4 | 7 | 7 | 3 | 25 | — | — | 34.0 |
| Adv. lungs or glands... | 2 | 1 | 1 | 1 | 1 | 6 | — | — | 8.0 |
| Double infection | 5 | 1 | 1 | 3 | 2 | 12 | — | — | 16.0 |
| Total adults... | 14 | 10 | 19 | 17 | 13 | 73 | 14.6 | 45.4 | — |
| Children— | | | | | | | | | |
| Slight gland or lungs... | 8 | 7 | 8 | 8 | 9 | 40 | — | — | 34.0 |
| Interm. ditto... | 5 | 12 | 8 | 6 | 7 | 38 | — | — | 31.0 |
| Adv. ditto... | 3 | 3 | 2 | 1 | 2 | 11 | — | — | 8.0 |
| Double infection | 2 | 4 | 2 | 4 | 3 | 15 | — | — | 12.0 |
| Various... | 1 | 5 | 2 | 3 | 5 | 16 | — | — | 13.0 |
| Total children... | 19 | 31 | 22 | 22 | 26 | 120 | 24.0 | 48.0 | — |
| CLASS V. AND VI.—Reacting to 1 in 1000 and 1 in 10,000. | | | | | | | | | |
| Adults— | | | | | | | | | |
| Slight lung or gland... | 3 | 0 | 0 | 1 | 0 | 4 | — | — | 16.0 |
| Interm. lung... | 0 | 0 | 0 | 1 | 0 | 1 | — | — | — |
| Adv. glands... | 2 | 2 | 1 | 0 | 1 | 6 | — | — | 24.0 |
| Double infection | 5 | 1 | 1 | 6 | 1 | 14 | — | — | 56.0 |
| Total adults... | 10 | 3 | 2 | 8 | 2 | 25 | 5.0 | 15.5 | — |
| Children— | | | | | | | | | |
| Slight lung or gland... | 0 | 0 | 0 | 0 | 0 | — | — | — | — |
| Interm. glands... | 0 | 0 | 0 | 0 | 1 | 1 | — | — | — |
| Adv. glands... | 3 | 2 | 4 | 3 | 4 | 16 | — | — | 34.0 |
| Double infection | 5 | 4 | 4 | 5 | 8 | 26 | — | — | 55.0 |
| Various... | 0 | 0 | 1 | 2 | 1 | 4 | — | — | — |
| Total children... | 8 | 6 | 9 | 10 | 14 | 47 | 9.4 | 19.1 | — |
| Total positives— | | | | | | | | | |
| Adults... | 40 | 25 | 39 | 34 | 23 | 161 | 39.0 | — | — |
| Children... | 47 | 54 | 53 | 43 | 52 | 249 | 61.0 | — | — |
| Total cases— | | | | | | | | | |
| Adults... | 42 | 26 | 40 | 36 | 23 | 167 | — | — | — |
| Children... | 58 | 74 | 60 | 64 | 77 | 333 | — | — | — |
| | 100 | 100 | 100 | 100 | 100 | 500 | — | — | — |

Per Cent. Results to Total Tests in the 500 Cases.

| | |
|---|-------|
| Negatives... | 18.0% |
| Reacting to 1 in 10, Group I. and II. | 20.4% |
| Reacting to 1 in 100, Group III. (?) | 8.6% |
| Reacting to 1 in 500, Group III. and IV. | 38.6% |
| Reacting to 1 in 10,000, Group V. and VI. | 14.4% |

Per Cent. to Age Groups in 410 Reacting Cases.

| | Adults. | Children. |
|---|---------|-----------|
| Reacting to 1 in 10, Group I. and II. | 26.6% | 23.6% |
| Reacting to 1 in 100, Group III. (?) | 12.5% | 9.3% |
| Reacting to 1 in 500, Group III. and IV. | 45.4% | 48.0% |
| Reacting to 1 in 10,000, Group V. and VI. | 15.5% | 19.1% |
| | 100.0% | 100.0% |

In the 500 cases here reviewed and classified many details are necessarily omitted for the sake of clearness. A more detailed classification is being arranged for the next 500, which I hope to complete during the present year. The present record only deals with the number of marks reacting, and not with the varied character of those reactions. The tables here presented were only compiled on the completion of the 500 cases and were arranged in hundreds to prevent any bias, and it is quite remarkable how each hundred repeated the characteristics of the other and bore out the general observations previously made.

Negatives.—Coming now to the consideration of the results as displayed in the tables themselves, absolute negatives and only indefinite reaction from "original," which is practically a negative, numbered 90 out of the 500, or 18 per cent. These are principally children sent for investigation on account of glands, some suspicious lung condition, or general appearances. The negatives recorded in children thus naturally far outnumbered the adults, because they were sent in routine from the school medical examination if there was any suspicion of tuberculosis. The adults were sent by general practitioners after mature consideration. Rarely where a negative occurred did subsequent observation make me suspect tuberculosis, and those few cases were among the earlier tests, before late examination of negatives for delayed reaction became routine procedure. These cases in no way vitiated the conclusion that a negative or slight reaction is valuable evidence in excluding active tubercular disease in cases where otherwise it would be considered the most probable cause. If patients are told that the M.P.C. test is made to disprove the existence of tuberculosis and not to prove that it is present, it frequently sets their minds at rest, and they allow the test willingly.

Negatives have been found especially useful where there is a doubt between septic and tubercular glands, although the condition sometimes co-exists. In many of these cases, chiefly children, we were able definitely to exclude tuberculosis and state that the glands were septic, and tell the patients that they should have either their noses, tonsils, or teeth attended to in order to remove the cause, generally with satisfactory results. Where bronchitis or asthma was present it has been possible to exclude tuberculosis as the main cause. Likewise in a specific knee-joint and in a case subsequently shown by X ray to be suffering from cervical ribs, thought to be spinal tubercular disease, M.P.C. excluded tuberculosis.

Other examples might be given of unexpected and valuable negatives recorded. M.P.C. is particularly valuable in the examination of tubercular-looking children suffering from various forms of other diseases. Tuberculin is the only satisfactory way in which the tubercular virus can be excluded—a matter of extreme importance to the patient. One must be careful not to include a delayed colour reaction as entirely negative. Delayed reactions have some value in suggesting further investigations in a doubtful case, but these are relatively so rare that the general propositions hold as stated.

The non-responding tubercular classes who either do not react at all or only very slightly to M.P.C. are the meningeal, intestinal with dilated abdomen, pleuritic, and the dying. It will be noticed that all these classes presuppose that a considerable quantity of tuberculin is secreted in an easily absorbable form, which would naturally prevent reaction appearing. This constitutes a special condition which may be called tuberculin reaction paralysis, and would naturally suggest an earlier stage of anaesthesia existing previously in which the power of the reaction to tuberculin is diminished, not obliterated. This condition would be the natural antithesis of the hypersensitive condition. Such conditions are interesting and important, but the discussion of them at present would lead me too far from the subject of this paper, which is really one of record.

It remains, however, to say that cutaneous sensitiveness must not in these cases be mixed up with either the general or the focal reactions, as they act in different and, in some cases, opposite lines.

Marks "I." and "II."—Next to the negatives come those cases reacting to the stronger tuberculin, a reaction demonstrated both in colour and elevation—namely, responses to original T. or P.T.O. and to a dilution of 1 in 10 of T., being classified as "I." and "II." There are 102 such cases, or 20 per cent. of those tested, of which 43 were

adults (8 per cent. of the whole) and 59 were children (12 per cent.). The adults reacting to "I." and "II." can be divided into two classes, advanced or dying cases and very slight cases. There were 20 advanced cases in this group (9 are already dead) and the rest are dying. The remaining 21 are only slightly infected (1 and 2 of Astor classification), and will probably easily re-establish their resistance, which in some cases is practically unimpaired, as shown by slight reaction given.

Thus, we see in adults when the response to the M.P.C. test is slight it divides cases into two easily distinguishable classes: (1) those very far advanced, and (2) those with slight infection. There are no intermediate cases. This group will be seen to differ from later groups in this respect. A slight response suggests either that a small amount of tubercular infection has taken place or that so much tissue has become involved, with the consequent extensive absorption of products causing tuberculin paralysis, that the resistance of the individual to the disease is practically at an end. It must be remembered that the same absence of reaction occurs after a course of tuberculin, which itself produces a condition of tuberculin anaesthesia—a matter of great importance to the patient.

Both ends of an infection, therefore, give the same number of reactions, the advanced case giving a dark reaction with slight elevation and often a delayed appearance, whilst the incipient case is brighter in colour and more elevated. Real brightness of colour is, however, rare in the mild case, more generally the colour being what I record as normal—about the colour of the inside of the lips—and the elevation being slight but distinct, suggesting that the balance of tuberculin resistance is well in favour of the patient. The two exceptions in the table to the advanced reaction pointing to a dying condition are interesting in that they are two advanced cases that have been put on a new treatment and are at a standstill. This is only mentioned incidentally to complete the record.

As regards slight reactions among the children, there were 59 who responded to "I." and "II." or 23.6 per cent. of the children tested. The same division into slight and advanced cases occurs among the children as among the adults. There were 39 slight lung cases, or 66 per cent. of the group, and 10 advanced cases, or 16 per cent. of the group. With children advanced lung lesions do not seem to be so fatal, and there is a larger amount of bronchitis intermixed with them. There is also a much greater difficulty in differentiating between the temporary and the permanent lesions except by extended observation—taking time. The other cases in this class beside pulmonary were various slight affections of the eyes, bones, &c., and cases that have had tuberculin treatment given before testing, which, as we have seen, lowers the reaction and must always be remembered when interpreting the results.

The absence of tubercular glands from this class is most noticeable. Tubercular glands give normally a higher reaction, making the differentiation between them and septic glands much easier. It has been a matter of doubt as to how far the two reinforce each other. They seem undoubtedly to do so in many cases, while, on the other hand, there are many large glands in which no septic character is traceable. Whenever affected glands exist the reaction tends to be higher, but this will be considered when recording double infection which occurs amongst the later reactions.

Mark "III. (?)"—Coming to the next group, Class "III. (?)"—a special class—it is here that the difficulty begins, and its correct reading will certainly puzzle when one commences to apply the test. M.P.C. marks are usually recorded as positive or negative, but frequently they are indeterminate. By indeterminate is meant that the elevation and colour differ only very slightly from the elevation and colour of the control, and it would, therefore, be a question if the mark stood by itself as to whether there was any reaction or not, but there is still a difference, which is quite distinct if careful observation is made when it occurs after a series of definite reactions. In some cases the line between positive and negative is so marked that there is no question about the result, but in the majority of cases there are one or two doubtful marks between the definite negative and the definite positive, which are recorded as questions (?). These doubtful marks never occur until the definitely positives are finished. They do not occur indiscriminately. The only

place in the series where they are of real importance is at the hundred dilution mark ("III.").

If "III." is positive it is in favour of the active disease. The statement is not made dogmatically, because I always throw the responsibility on the other side and leave it for others to say that active disease is not present when there is a response to 1 in 100 dilution. When that reaction is recorded I believe the onus of proof is to show that the tubercular virus is not active. To adopt the negative course, though rather comforting to the patient, would in most instances be highly dangerous. Certainly I hold that if a case responds to a "III." dilution positively I have to satisfy myself that the disease is not active, but if only "II." is positive and "III." is definitely negative I allow the general condition of the patient to influence the decision if the symptoms are slight. Hence the importance of the "III." (?) as a class.

The greater number of cases recorded in the table (13 out of 20) are still slight, but intermediate cases begin to appear. The more serious cases also diminish proportionately, and their condition is not so serious. There are no dying cases in this group at all and the slightest cases are more active as a class.

In following out the classification of tuberculosis, according to the Astor report, into six classes, as I have in my records, there is one distinct disadvantage. In Astor's classification 3 is kept for acute cases only. As acute cases occur all through the series of classification I consider that adding "A" to the Astor number would give far preferable results and would prevent crowding all the intermediate and bad, but possibly curable, cases under heading 4, as I have found so disadvantageous in making this classification. "Advanced," practically takes in not only the dying and bedridden cases, but also those with extensive mischief which has become quiescent. A patient can often go about, and in some cases even return to work, when, if lung conditions were only considered, he should apparently be classed in Astor's fifth class. These cases would be better classed as 4 and the milder cases with larger area should be classed as 3. In active cases "A" should be added to the class, thus there would be 4 A as well as 3 A.

The difficulty in the existing Astor classification is that extensive lung mischief and advanced cases are not synonymous conditions. In these records there is some ambiguity produced by this difficulty in classification. So for the purpose of this return it has been deemed advisable to divide tubercle into the old classes of slight, intermediate, and advanced. "Slight" comprises 1 and 2 Astor classification; "intermediate" being practically 4 of Astor classification as the acute cases (3) are naturally rarely seen, as they are usually confined to bed. "Advanced" would be practically 5 of Astor classification, as 6 would not often be seen at the dispensary for the same reason as 3.

In considering the children reacting to "III." (?), they are all practically composed of slight lung and slight gland cases, which latter begin here to first appear. In their case this group does not take such an important position as in the adults.

Marks "III." and "IV."—Now we come to the group comprised by "III." positive and "IV." mark M.P.C., or where the reaction is to dilutions of 1 in 100 and 1 in 500. This group comprises the main number of active treatable cases and makes far the most numerous group, being 39 per cent. of the whole number. It totals 73 adults, or 45 per cent. of those responding. It will be noticed in this group how much more evenly the various stages of the tubercular disease are distributed than is the case in the previous groups. Patients in the intermediate stage of the disease number 25 (or 34 per cent. of the group), nearly equalling the early cases—30 (or 41 per cent.). The advanced are only 6 and have fallen proportionately from 49 per cent. of the first group to under 8 per cent. of this class, and they are not by any means so far advanced.

With children instead of lungs glands have now become the predominant trouble, and the 40 slight cases (34 per cent. of the group) and the 38 intermediate (31 per cent.) occupy nearly the whole class, the intermediate and advanced cases being practically all gland cases, which type are much more liable to reaction to tuberculin. This was further emphasised by their subsequent sensitiveness to inoculation.

It is interesting to note in connexion with this class responding to "III." and "IV." dilutions that here the

double infection first appears. By double infection is meant the infection of two dissimilar tissues. It has been noticed that double infection gives a higher reaction than would be expected from the same amount when only single tissue is involved. This is most marked where the complication is glands, then the anæsthetic tubercular condition does not occur so easily.

Marks "V." and "VI."—Now coming to the last group, those reacting to "V." and "VI." M.P.C. the point of greatest interest is the number of cases that reacted to such a high dilution of tuberculin; 72, or 14.4 per cent., of the whole number tried are in this class, the adults giving 25 cases, or 15.5 per cent., and the children giving 47 cases, or 19 per cent. It is also noticeable that double infections here predominate, amounting to more than half. Of the total of 72 reacting 40 show double infection, the adults being 56 per cent. of their class and the children numbering 26, or 5.5 per cent.

When there is slight or even moderate double infection the hypersensitiveness may be acute and tuberculin injections must be used with great care. This is emphasised by double infections not appearing till dilutions "III." and "IV." are recorded. The 3 cases in which the skin ulceration occurred when old tuberculin was used for making the original mark in days gone by were all strong, stout girls belonging to the double infections class, whose response was of the highest, and even the "VI." mark showed such a strong reaction that they would probably have reacted to "VIII." or 1 in 1,000,000 if it had been tried, and their subsequent history, though they are all doing well, showed how a dormant focus was very liable to light up. In spite of the fact that they kept the upper hand of the virus, their margin of safety was not very great, the tubercular anæsthetic condition being particularly difficult to produce. The ulcers were clean cut and superficial, not going to any depth, and they rapidly healed. The dermatitis which occurred was not in any way complicated by any skin disease or by the tubercular bacillus itself. These considerations, however, have really more relation with the lupus investigations, which it is proposed to record later.

Sixteen of the children had advanced glands, showing large lumps on the side of the neck; "advanced glands" being recorded when the glands are prominently noticeable on first seeing the patient. "Intermediate" is recorded when they are immediately apparent to touch.

It may be observed in passing, although not properly belonging to this article, that tuberculin should be injected with great caution when there are large glands and the dose should be very slowly raised. These investigations may explain the reason why so much difference of opinion prevails about the use of tuberculin. Here also will probably be found the key of many different results and records, and certainly after one is intimately acquainted with the reaction of the M.P.C. there would be considerable hesitation as to the quantity of the dose to begin with and the rapidity with which it is advisable to increase the dose without its guiding information. It may also be as well to put on record, although it will be dealt with more fully in a subsequent paper when more complete analysis of the reactions come to be tabulated, that the P.T.O. used for mark "I" has given a definite indication as to whether there is a bovine infection or not, as absolute negatives to original P.T.O. are not uncommon when T. responds in as high a dilution as "IV." or 1 in 1000, but the contrary condition is very rare.

Returning to Group "V." and "VI.," although cases in this group are hypersensitive, and on account of that sensitiveness must be considered dangerously balanced cases, the records of the past year go far to show that under careful treatment they do very well. The details of their treatment would lead me too far from my present purpose, but it is well to put on record that very high reactions do not in themselves mean that any dangerous result may be anticipated, but rather the reverse. Results are good, but high reactions do emphasise that more caution must characterise the treatment. These cases are much more liable to sudden and sharp extensions of their lesions, and so require constant watchfulness. The advanced cases recorded are all acute gland cases in this group, and have all done well. It might be stated that the tubercular focus produces a purely inflammatory infection much further into the surrounding tissue in these cases rather than a definitely

infectious invasion, in contradistinction to the other end of the M.P.C. sequence illustrated in "I." and "II." when infiltration of the tissue by the virus and its products seems to occur with little or no inflammatory resistance.

The further details of the meaning of each individual class would make this preliminary report too complicated. Here it is only desired to deal with general results.

In reporting to doctors on their cases forwarded for opinion no dogmatic attitude is taken up, but reports are worded that the case responds to 1 in 100 ("III.") M.P.C., and so on, with such evidence of lesion as exists. The suggestion is made where the lesion is slight and the response is above 1 in 100 ("III.") (?) that the condition is probably active and will be benefited by treatment. If mark reactions are more extended it is wise to give patients the benefit of the doubt and treat them for active disease. The number that do not benefit as the result of such treatment will be found to be quite negligible. When this view is not taken and the danger is neglected quite a number, as their subsequent career shows, have taken the wrong turning.

One result which appears sufficiently definite, but which will require much deeper and extended observation, is the relation of the curve of tuberculin in the M.P.C. to the amount of tissue and the kind of tissue involved, and also its relation to the time of the occurrence of the active infection. It has only been demonstrated here that such a curve exists, and that it is definite and characteristic. Much more extended and wider observation will be necessary before its variations are accurately known. Suffice it to say that cutaneous reaction commences with a slight amount of infection, very rapidly reaches a maximum, and then gradually subsides. The controlling factors of the height of the curve, other than double infection, have not been elucidated, except that increased height of mark means increased activity and darkening of colour greater passivity or age of reaction, the danger of the case being proportional to the dark colour and low infiltration if the case is going to the bad. The slighter elevation and fewer dilutions reacting are favourable to the case if it is on the improving side.

Dealing with some side issues I may mention that a very valuable means has been given of estimating the strength of dilution of various tuberculins and the relative reactions of various kinds of tuberculin. There has not been time to make more than a few tentative experiments, but they go to show that the higher dilutions do not keep more than a fortnight, and that the reaction of fading dilution is somewhat of the same nature as an old tuberculous infection.

In conclusion, to sum up these observations and results here believed to be demonstrated.

First, that the papillary layer of the skin is the one most influenced by tuberculin, and that that layer reacts to graduated doses, in definite proportions to the dose employed, with mathematical accuracy consistent with the character of the case—that is to say, "III." mark never reacts more than "II." and the result being definitely proportional to the dose and the final reaction.

Secondly, the results appear definitely to indicate that when the M.P.C. reacts above "II." or 1 in 10, especially if colour reaction occurs, the onus of proof that the case is not suffering from active tuberculosis lies with the opposition.

Thirdly, the results also show that there is a distinct connexion between the M.P.C. reaction and the class in which the case is, and this relation is sufficiently definite to be a great aid to diagnosis and prognosis. When they do not apparently agree further investigations can generally demonstrate the cause; for instance, the lowering of the reaction caused by a previous course of tuberculin treatment.

Finally, the results also indicate that the highest M.P.C. reaction occurs comparatively early in the case; a greater subsequent extension of the disease gives a lower reaction.

It is hoped that sufficient evidence has been brought forward to justify the statement that M.P.C. properly and accurately carried out materially facilitates the early recognition of the condition of active tuberculosis, and is a material aid towards a general prognosis and a valuable indication in tuberculin treatment. If these matters have been put into a class of theories that should be proved or disproved the purpose of this paper has been accomplished.

Middlesbrough.

A NOTE ON THE USE OF CELLULOID IN PLASTIC SURGERY.

By CHARLES HIGGENS, F.R.C.S. ENG.,

OPHTHALMIC SURGEON TO GUY'S HOSPITAL AND TO THE COUNTY OF LONDON WAR HOSPITAL.

DURING the past six months I have had the opportunity of doing some 80 to 100 plastic operations on the face. The greater part of them were for scarred and lacerated eyelids and shrunken sockets, but I had quite a number of deeply scarred faces, and noses smashed as flat as I can imagine trenches are after a bombardment. At the beginning, with the exception of what I had learned in many years of ophthalmic practice, I knew about as much of this branch of surgery as the historic cow knew of the proverbial musket, but I soon began to recognise the want of a material which would make up deficiency of bone, fill up cavities, and level up hideous depressed cicatrices.

Quite early I began to look about for such a material and some method by which scars could be more or less obliterated. I tried paraffin, but without much success. When used to fill up a scar it would generally find a way to wriggle out of the position it was placed in and was anything but satisfactory. The removal of cicatrices and bringing the skin together over their former position was not more successful, for the new wound generally managed to accommodate itself to the previous conditions, and the deformity was but little improved.

Then it occurred to me to try celluloid. It seemed to me that it was a harmless substance and not likely to set up irritation; in this subsequent experience has not disappointed me. I have used plates of celluloid for replacing bone, and solutions for filling cavities and raising deep cicatrices. I have two solutions—one celluloid dissolved in acetone, the other a secret preparation made originally for trade purposes, its use being to make bad corks water-tight and air-tight. It appeared to have a great future from a commercial point of view, but the war came and spoilt its chance. This I think the better of the two.

At first I placed quite a number of plates of celluloid beneath deep cicatrices with most excellent results; the scars have become flat, are wearing out as time goes on, and not the smallest amount of irritation from the foreign body has occurred. I have also used it for replacing bone, and have built up three quite respectable noses with celluloid bridges. I have in all cases covered the celluloid over with skin taken from the remains of the part to be reconstructed or by flap removed from the immediate vicinity and left attached by a pedicle. The only precaution I have found necessary to adopt is to take care that the edge of the celluloid plate, which is rather sharp, should not coincide with the line of suture after the wound is closed; otherwise it may push its way out before healing has taken place. This is easily obviated by under-cutting the outer edges of the wound to be filled, and pushing the edges of the plate beneath the skin so raised that its margin is external to the line of suture.

Lately I have given up using plates for cicatrices in favour of the fluid preparation. The method I adopt is to make a small incision in the normal skin just beyond one end of the scar, then with a Graefe cataract knife in the case of small short scars, and with a scalpel or chisel such as is used for mastoid operations in the longer ones, separate it from the parts beneath. When this has been freely done I inject the fluid, or rather semi-fluid, celluloid into the tunnel so made until the scar rises a little above the surrounding surface. I then remove the syringe and smooth the scar down nearly level, finishing by closing the wound with a collodion dressing. The piston of the syringe used should be worked by a screw, because the solution is too thick to pass readily through the nozzle, and so much force is required that steadiness and equality of flow are difficult to ensure if the piston is forced in by hand pressure only. I am more than satisfied with the result of my celluloid operations, if I may call them such, and think there is a great future for them. I have had some celluloid fracture-plates made, but as yet have not had the opportunity of using one. I think it is quite probable that they may take the place of the steel plates at present in use.

Since I wrote the foregoing my colleague, Major Pailing, has filled an opening in the skull with a celluloid plate. The edges of the plate, which was curved to correspond with the curve of the skull, were pushed between the bone and dura and covered by the scalp. The operation was performed on Sept. 15th. On the 26th there had been no bad symptoms of any kind, pulse and temperature being normal during the whole time, the wound was firmly healed, and the patient said the only thing he noticed was that he had entirely got rid of headache which had troubled him for some weeks.

Brook-street, W.

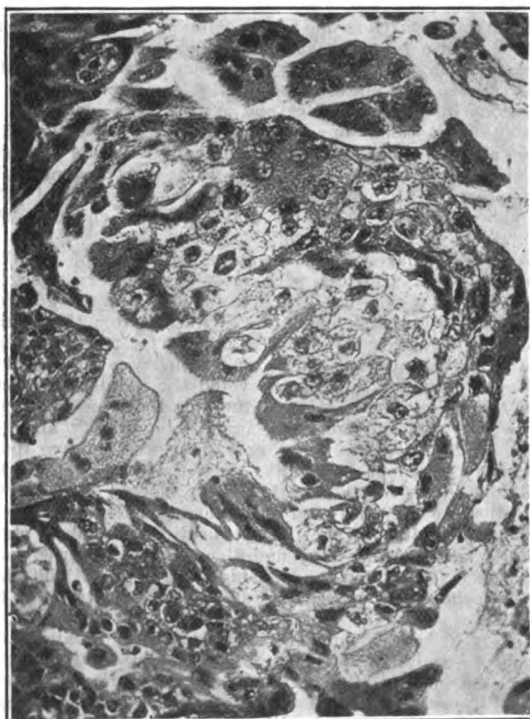
A CASE OF CHORION - EPITHELIOMA.

By H. NEVILLE TAYLOR, M.A. CANTAB., M.A.,
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It is said that there is ground for believing that chorion-epithelioma may in exceptional instances remain latent for a considerable period; some few cases of such a delayed incidence of as long as two years after the pregnancy to which the disease was attributed have been recorded. The following case somewhat supports the view of the possibility of such a latent period.

FIG. 1.



Showing branching masses of syncytium; masses of differentiated cells; blood spaces. $\times 250$.

A woman aged 38, the mother of three healthy children, the youngest two years old, began to suffer from some irregular uterine hæmorrhage which gradually became more abundant; there had been no amenorrhœa since her last pregnancy. She was curetted in a provincial hospital and was discharged, temporarily at least, improved.

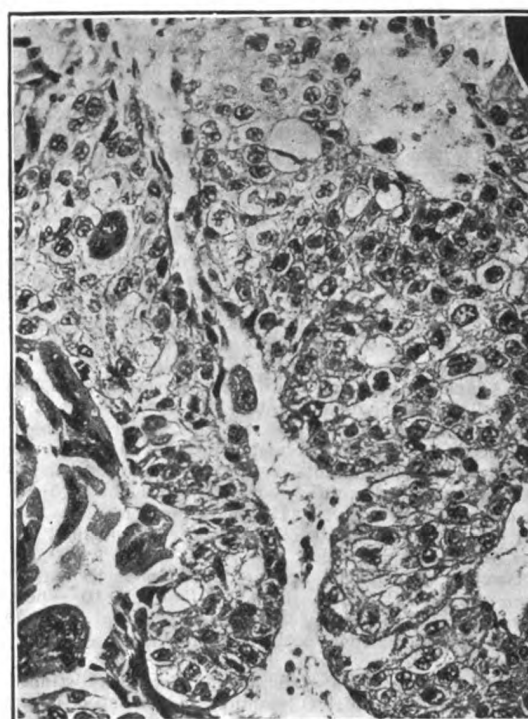
About a month afterwards I saw the patient in consultation with her medical attendant; she was then suffering from metrorrhagia and vomiting. On examination the uterus felt somewhat enlarged and soft, and there was a little blood oozing from the cervix. It was thought that, though there had been no preliminary amenorrhœa, the probability was that she had had an early abortion and that there might still be something retained, and a fresh curetting was discussed, but the vomiting and hæmorrhage subsided in a great measure under medical treatment. After about three weeks or so I was asked to see her again as the bleeding had

recurred more or less suddenly and more copiously than ever. She was very anæmic and had altogether changed for the worse, with a very "malignant" look about her. I admitted her to hospital, and that afternoon under chloroform removed with a blunt curette some unmistakably malignant fragments. She was very collapsed from the effect of the anæsthetic and the further bleeding, and she died somewhat suddenly from syncope in the early hours of the next morning.

Whether the initial hæmorrhage was due to an abortion or not we were unable to determine, but we were inclined to put the patient's trouble down to that possibility with its frequent sequelæ of subinvolution bleeding, and in spite of the absence of any amenorrhœa and any other suggestions of pregnancy. If, however, deciduoma malignum is always the result of a conception—and if there was no conception in this case—then it is necessary to go back to the last pregnancy of some two years ago to account for the chorion-epithelioma.

Galabin has described three varieties of chorion-epithelioma; this specimen would seem to belong to the second variety of structure, with regard to which he says: "It is made up in about equal parts of syncytium—generally in large branching masses, and of masses of discrete cells. Large spaces containing blood are a marked feature of the growth, and the syncytium appears to lay open the blood-vessels in a manner which has been compared to the function of the syncytium in the development of the normal placenta."

FIG. 2.



Showing large mass of mature differentiated cells; large blood space; small branches of syncytium in the corner. $\times 250$.

The accompanying microphotographs, taken by the Clinical Research Society, show very well the structure detailed above—viz., branching masses of syncytium, masses of discrete cells, and the large blood spaces.

Ebbw Vale.

DEATH OF MR. SAMUEL LANDOR BENTON.—The death occurred with tragic suddenness at Lewes, on Sept. 26th, of Mr. Samuel Landor Benton, at the early age of 34. In practice at Lewes with Dr. W. A. Dow, who is engaged on military duties, Mr. Benton was deputising for his partner in his public appointments, and while working late at night he had a sudden seizure, and, despite all that medical skill could do, he passed away in a few hours.

SPINAL ANÆSTHESIA, WITH SPECIAL REFERENCE TO THE ACUTE ABDOMEN.

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MY experience of this form of anæsthesia extends over a period of five years. For three years and a half I used the heavy, or Barker's, dextrose solution of stovaine, strength 5 per cent. During that time I limited its use to operations below the umbilicus, and rarely employed it for any abdominal operation other than appendicectomy and operations on the bladder. Eighteen months ago, acting on the advice of Mr. G. Ramsey Phillips, I abandoned the heavy solution, and have since used exclusively the Billon solution of stovaine in sodium chloride, strength 10 per cent. The advantages of the light over the heavy solution are as follows: (1) rapidity and constancy of action; (2) tilting posture unnecessary, thus allowing administration on any table, improvised or otherwise; (3) the head is kept lower than the feet throughout the operation; (4) the Trendelenburg position can be adopted as soon as the operator may wish; and (5) the higher average level of analgesia.

The operations performed with this form of anæsthesia include plating for fractured tibia and femur; fractured patella; removal of semilunar cartilage; varicose veins; skin grafting; amputations of lower extremity; hernia, femoral, inguinal, umbilical and ventral, strangulated and otherwise; varicocele; hæmorrhoids; removal of testicle; radical cure of hydrocele; internal urethrotomy; external urethrotomy; cystoscopy; cystotomy; prostatectomy; appendicectomy; hysterectomy; salpingectomy; cholecystostomy; perforated gastric ulcer; gastrostomy; and gastro-enterostomy. The ages of the patients have ranged from 6 months to 70 years.

The value of spinal anæsthesia in operations known to be attended by shock to the patient is generally recognised theoretically, and in this class of case its use is distinctly indicated. An interesting example was that afforded by a patient whose thigh I amputated through the hip-joint. This patient, a male aged 54, had a myxochondroma of the femur. He had long-standing aortic disease, and seemed a poor surgical risk. His pulse-rate never rose above 90, and the next morning he was reading the newspaper.

In operations on the urethra stovaine is, from the surgeon's point of view, ideal. Relaxation is so absolute that the difficulties are reduced to a minimum, and such a thing as impassable stricture ceases to exist. In a case of extensive extravasation of urine I was able, after making the usual free incisions, to perform an internal urethrotomy with excellent result.

In prostatectomy the method has been sufficiently emphasised by Mr. H. M. Page,¹ who has also recently contributed an article on its use in abdominal surgery.² Its rôle in this latter sphere demands further consideration. Here the psychic factor assumes added importance. It is the psychic factor which is, I believe, responsible for the prejudice which has limited and cramped the use of spinal anæsthesia. It is a fundamental principle, if success is to be attained, that psychic influences shall be reduced to vanishing point. Mr. Page accomplishes this by administering a small quantity of general anæsthetic. The same result can usually be obtained, less easily, I admit, by strict attention to technique.

It is essential to recognise that spinal stovaine is an anæsthetic and consequently should be administered by a competent anæsthetist, with all the ritual of a planned and considered performance. It is precipitating failure to usher forthwith a nervous patient into an operating theatre with its unaccustomed atmosphere and evidences of fearsome preparation. Before the puncture is made the mind is a prey to nervous fears and forebodings. Then perhaps follows an investigation as to the level of analgesia. Small wonder

is it that the patient so treated will feel things without being touched.

The technique recently adopted with complete success is as follows. A preliminary injection of morphia and atropine is given half an hour to one hour before the time fixed for operation. The spinal puncture is made in the anæsthetising room, the patient being told that she will not actually lose consciousness, but will be drowsy and will feel nothing. The eyes are bandaged, the ears plugged with cotton-wool, and suggestions are made that the patient goes to sleep. She is then wheeled into the operating theatre and lifted on to the table, and so arranged that the feet are higher than the head, this position being maintained throughout the operation. The towels are arranged and the field of operation is made ready. No testing to determine the level of analgesia is carried out, but the operator watches the face as he clips the towels to the skin. Absolute silence is maintained, not a word being spoken till the operation is completed. Instruments are handled with the utmost care, so that the clank of metal and the click of the artery forceps shall not be audible.

Operating under such conditions is good for everyone concerned; good for the patient, for it induces mental rest; good for the operator, for he must be gentle; good for the assistant, for he must be alert and intelligent; good for the theatre staff, for they must work accurately and smoothly.

Spinal anæsthesia has its indications in two distinct types of abdominal operations—operations of expediency and operations of urgency. Cases which have come under my care during the last few weeks will serve to illustrate such indications in the expedient class. In these cases the choice of anæsthetic was not a matter of indifference. General anæsthesia was definitely contra-indicated, and would in all probability have determined failure.

A very stout, middle-aged woman was admitted with a ventral hernia. I had removed her uterus 18 months before under a general anæsthetic. For a week afterwards she had vomited violently. Her abdominal muscles were poorly developed and the long-continued strain on the healing wound was, in my opinion, responsible for the development of her hernia. The patient was reluctant to undergo another operation, owing to her dread of this post-anæsthetic vomiting, and I was doubtful of success should it again occur. Stovaine was administered in the manner described, dose 7/10 c.c. Progress was quite uneventful, with no vomiting and no headache. When asked which anæsthetic she preferred, the patient emphatically decided in favour of stovaine.

A woman, aged 35, was admitted with pyloric stenosis. Two previous attempts at operative treatment had been made with a general anæsthetic. On the first occasion it was necessary to perform tracheotomy as soon as the abdomen was opened. On the second occasion urgent symptoms compelled the operator to desist before the abdomen was opened. Stovaine was administered and a posterior gastro-enterostomy performed without any difficulty. The influence of "team work" as a time-saving factor was also clearly demonstrated. The operation from spinal puncture to the last skin stitch was completed in 35 minutes. Three rows of sutures were used for the anastomosis. The abdominal wall was sewn up in four layers. The absolute flaccidity of the abdominal parietes is a revelation to those accustomed to operate on the upper abdomen under general anæsthesia only.

It is, however, in the surgery of the acute abdomen that spinal anæsthesia proves of still greater service. It is administered, too, in more favourable circumstances. These patients are in pain, and only too frequently have been so for many hours, perhaps for several days. The immediate relief afforded by spinal anæsthesia produces a mental attitude of tranquillity and confidence, and thus the psychic factor is effectually abolished. From the surgeon's standpoint the conditions for easy and expeditious operating are ideal. Relaxation is more complete than can be obtained with the most profound general anæsthesia; bowel, however greatly distended, shows no tendency to escape from the abdomen, and when displaced obediently maintains its position. A phenomenon which I have frequently noted deserves particular mention. In many cases of obstruction consequent to widespread peritonitis the bowels have acted on the table. This forcibly suggests that so-called paralytic ileus of inflammatory origin is not a true paralysis, but is due to an active inhibition, and that these inhibitory impulses are abolished by spinal anæsthesia. In one such case, following closely on an operation for acute

¹ THE LANCET, June 10th, 1916, p. 1169.

² Guy's Hospital Gazette, July 1st, 1916.

appendicitis, the patient was taken to the theatre for further operation. Stovaine was administered, but before the abdomen could be opened the patient vomited a large quantity of foul-smelling fluid, and the bowels acted copiously. Operation was deferred, but the obstruction recurred, for which jejunostomy was performed. It was later shown that this recurrent obstruction was mechanical, the terminal portion of the ileum being firmly bound to the pelvic floor by firm inflammatory adhesions. The significance of this observation as to the action of spinal anaesthesia on obstruction, due to spreading peritonitis, is sufficiently obvious. It implies that spinal anaesthesia should invariably be used in acute abdominal lesions associated with such conditions. It would seem, therefore, that this form of anaesthesia should be particularly useful in military abdominal surgery, and I strongly urge its claims in this connexion.

That patients whose condition is so bad as almost to preclude operation can be safely dealt with by this method is shown by the following cases.

A woman, aged 35, was seen in the casualty department of the West Ham Hospital. She had been ill for five days. The abdomen was greatly distended, rigid, and acutely tender. The patient's face was deathly pale; pulse-rate 160, scarcely perceptible. She was immediately taken to the operating theatre. Stovaine was administered and subcutaneous saline was run into both axillae. The face almost immediately lost its anxious, drawn look, and the patient dozed throughout the operation. A subumbilical median incision exposed inflamed coils of intestine stuck together by recent lymph. On gently separating the coils pools of pus were evacuated, this condition obtaining from the under-surface of the liver to the bottom of the pelvis. The cause of the peritonitis was a pyosalpinx. Both kidney pouches and the pelvis were drained by large rubber tubes. The operation lasted half an hour. The patient's pulse at the end was better than at the beginning. The bowels acted on the table. Slow but complete recovery was made.

Another patient was admitted for obstruction due to a very large and old-standing ventral hernia. She was 67 years of age and had been ill for four days, the vomit having become fecal. Stovaine was administered, subcutaneous saline started, and the operation commenced. The coils of gut were densely adherent to each other and to the sac wall. One coil, about 2 feet long, was found acutely strangulated, but as it showed signs of recovery it was replaced in the abdomen. The patient was perfectly quiet and placid throughout the operation, which lasted just over an hour. She developed a parotitis and an abscess at the site of injection of the saline, but otherwise made an uneventful recovery. The bowels acted copiously on the table.

The advantages of spinal anaesthesia to the operator are obvious and incontestable, and my experience leads me to urge that, particularly in the acute abdomen, the advantages to the patient are equally great.

Queen Anne-street, W.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON A CASE OF BERI-BERI.

By G. MARSHALL FINDLAY, M.B., CH.B. EDIN.,
TEMPORARY SURGEON, R.N.

THE following case of beri-beri presents certain interesting features in regard both to the history and the clinical symptoms of the attack.

The patient, aged 23, is a leading telegraphist in the Navy, and is of somewhat better education than the average naval rating. He entered the service in 1903 at the age of 16 and remained in home waters until February, 1911, when he was ordered to the Persian Gulf. Except for short intervals in Colombo and Bombay, he had spent the whole of the past five years in this part of the world. For the first seven months after arriving in the Gulf he remained in perfect health, but in September, 1911, he noticed that he was becoming weak and easily fatigued, and that his feet and legs were beginning to swell. He did not at this time complain of any cardiac symptoms, and apparently was entirely cured by three weeks' treatment in the sick bay. During the ensuing winter he contracted malaria while serving ashore, but was otherwise healthy. It was not until June, 1912, that signs of oedema again appeared in the feet and legs,

accompanied by shortness of breath, palpitation, and loss of deep reflexes—the classical signs of beri-beri. The patient spent four weeks in hospital and then returned to duty.

Throughout 1913 there was no recurrence of any of the symptoms, the patient attributing this to his having been in Colombo during the greater part of the year. It is an interesting fact that beri-beri was formerly very common in Ceylon; so much so that the word beri-beri is derived from an old Singhalese expression meaning weakness; now, however, it is rarely seen in the island. In September, 1914, while cruising in the Indian Ocean, symptoms of beri-beri again occurred, but completely disappeared after eight weeks' treatment in hospital. With the exception of a slight attack of malaria in the spring of 1915, the patient remained perfectly healthy until September of last year, when symptoms of the disease again appeared. As before the earliest signs were swelling of the feet and legs and loss of appetite. Later, cardiac symptoms began to develop, characterised by shortness of breath, pain and palpitation over the cardiac region.

In appearance the patient seemed well nourished, though very anæmic. There was marked swelling on the dorsum of the feet, round the ankles, and over the anterior aspect of the legs as high as the junction of the middle and upper thirds. A very slight swelling was also present for a short time over the forearms and hands. The affected areas were symmetrical on the two sides, while the oedema was of somewhat firmer consistence than that in Bright's disease. There was never any oedema on the chest or face.

Nervous system.—For the first few days of the illness the deep reflexes were exaggerated, but later they wholly disappeared and remained in complete abeyance for a period of three months. Then the knee-jerks reappeared, to be followed about one month later by the return of the Achilles jerks. At the present time—eight months after the onset of the illness—the knee-jerks are normal, while the Achilles jerks are still somewhat sluggish. Ankle clonus has never been present, and the superficial reflexes have always remained normal. There has been considerable impairment of cutaneous sensation on the dorsum of the fingers and toes, more particularly in regard to touch and pain. A peculiar numb feeling at the tips of the fingers was also complained of for a short time, but this has now completely disappeared.

There was considerable pain on grasping the calf muscles, and a similar symptom was present to a less extent in the muscles of the forearm. The muscular power was good, and at no time was there any evidence of wasting or of the reaction of degeneration. In the gait there was no true ataxia, although the patient habitually walked with his legs straddled and with a slight dragging of the feet. Foot-drop was absent. The "squatting test" described by Willcox¹ has been well marked and is still present. Rombergism is a striking symptom. The Argyll Robertson pupil, however, is absent, and there are no signs of any parasymphilitic lesion. The Wassermann reaction is negative. A certain amount of incoördination is still present, more particularly in the upper limbs; thus, with the eyes closed the patient is unable accurately to locate the tip of his nose. On the other hand, there is an entire absence of any intention tremor. There has never been any interference with the innervation of the oesophagus or larynx, a not uncommon symptom in beri-beri; the special senses also have all remained normal. The mental faculties are unimpaired.

Cardio-vascular system.—The symptoms referable to this system did not develop until about a week after the onset of the oedema. They consisted of shortness of breath, palpitation, and slight pain over the cardiac region. On examination the heart was found to be slightly dilated, more particularly towards the right side. The heart sounds were normal, though of a somewhat tic-tac character, while the spacing of the sounds gave rise to the peculiar pendulum-like rhythm described by Manson. The pulse was of low tension and easily compressible; it varied in rate from 80 to 100 per minute.

The alimentary system was normal except for the loss of appetite, while the urine never contained any abnormal constituent.

An interesting fact in regard to the above case is that during the two commissions which the patient served in the same ship there were no other instances of beri-beri among the crew. There is no apparent reason why he alone should have fallen victim to the disease. He is a teetotaler and a moderate smoker, and his diet consisted of the ordinary ship's ration, made up as follows: 1 lb. white bread or $\frac{1}{2}$ lb. biscuit; $\frac{1}{2}$ lb. fresh meat; 4 oz. preserved meat (twice a week); 1 lb. vegetables, usually potatoes and onions; 4 oz. sugar; $\frac{1}{2}$ oz. condensed milk; 1 oz. jam; and $\frac{1}{2}$ oz. tea. White rice, butter, and fish were all eaten occasionally, and lime-juice was issued every day. There is only one fact which points to a deficient diet as

¹ Willcox: Beri-beri, THE LANCET, March 11th, 1916.

having been the determining factor in this case—namely, that during the seven months previous to his first attack he never partook of any fresh meat. This defect was remedied after the first illness, without, however, preventing the recurrence of the disease.

There have thus been four attacks of beri-beri, all of the wet type, occurring at varying intervals, and characterised by a gradually increasing period of disability.

THREE CASES OF BELLADONNA POISONING.

By MARY E. JOLL, M.B., B.S. LOND.,

HOUSE PHYSICIAN, ROYAL FREE HOSPITAL, LONDON.

THE dangers of belladonna poisoning are well brought home by the following cases; *Atropa belladonna* is of fairly frequent occurrence within reach of children.

A boy, aged 6 years, was brought to the Royal Free Hospital on Sept. 16th in a condition of delirium. He staggered about talking to himself and making movements as of picking and eating things. His face was flushed and the eyes were widely dilated and not reacting to light. The tongue was dry and the pulse rapid, 156 per minute, and feeble. On inquiry it was found that he had eaten some berries in a public garden near by about four hours previously and since then had complained of dryness of the mouth and sickness, and had later become drowsy and would eat nothing. The symptoms pointed to belladonna poisoning, and the stomach was washed out. About 20 purple berries were found in the stomach contents. Two little girls, aged respectively 4 and 5 years, were also brought to the hospital within the next half hour with similar symptoms, though of less severity, and with a history of having eaten berries from the same garden. They were treated in the same way. All three children were admitted to the ward. The boy had to be sewn up in a blanket, as he was so restless. Pilocarpine nitrate, gr. 1/10 hypod., was given and hot bottles were applied to the feet. He became more delirious, tongue became drier, face more flushed, pulse more feeble, and temperature was slightly raised. More pilocarpine nitrate (gr. 1/6) was given, but he had no sleep. The next day the symptoms were even more marked; the child was still very delirious and vomited twice, the pulse was 150 per minute, and feeble, temperature 103.4° F., face flushed, and pupils were still widely dilated. A soap enema and pilocarpine nitrate, gr. 1/6 hypod., were given, and tinct. opii, min. iv., repeated once was given to procure sleep. The next day the temperature and pulse were down but the tongue was still dry and the face flushed. On the fourth day the tongue became moist but the delirium continued until the fifth day. On the sixth day the boy was discharged with pupils reacting only sluggishly. The two little girls recovered more rapidly, although the younger child vomited several times. In no case was there any diminution in urinary secretion.

A visit was made to the public gardens and four large fruiting shrubs of the *Atropa belladonna* were found. The gardener said that they had fruited there for many years and he knew them to be belladonna plants but thought them innocuous. It seems strange that with such free access other cases of poisoning have not occurred.

THE LONDON SCHOOL OF MEDICINE FOR WOMEN: OPENING OF NEW BUILDINGS BY THE QUEEN.—On Oct. 3rd, the date of the opening of the winter session for several of the London medical schools, the Queen opened an extension of the London (Royal Free Hospital) School of Medicine for Women in Hunter-street, W.C. Her Majesty was received by Miss L. B. Aldrich-Blake (Dean of the School), the Duchess of Marlborough (honorary treasurer of the Extension Fund), Mr. Acland, M.P. (chairman of the council), and Miss L. M. Brooks (the secretary and warden). Mrs. Garrett Anderson was absent owing to ill-health. The opening ceremony took place in the anatomical department, where Miss V. P. Thomas, the holder of the Queen's scholarship, presented a bouquet to Her Majesty. Miss Aldrich-Blake, in a brief historical address, stated that the school was founded by Dr. Sophia Jex-Blake in 1874, when the students numbered 14. In 1900 larger premises were built on the original site, and these had now been greatly extended. Miss Cullis, lecturer in physiology, having thanked the Queen for her presence and the interest which she had taken in the school, Mr. Acland presented a key to Her Majesty as a memento of the occasion. The Queen then declared the new buildings open. The cost of the extension, including equipment, has been £30,000, all of which has been subscribed, and the new building opens free of debt. The number of students at present on the roll of the school is 380.

Reviews and Notices of Books.

Refraction of the Human Eye and Methods of Estimating the Refraction.

By JAMES THORINGTON, A.M., M.D. London: William Heinemann. Pp. 407. Price 10s. 6d. 1916.

In the preface we are told that this "is an amalgamation of the author's works, 'Refraction and How to Refract,' 'Prisms,' and 'Retinoscopy,' so as to produce a book suitable for all beginners in ophthalmology, and particularly for those who have a limited knowledge of mathematics." In deference to these Dr. Thorington does not introduce a single mathematical formula, and consequently there is a lack of precision in his statements about lenses and prisms. As an instance we will quote a few lines on combined prisms (p. 48). Incidentally they will also illustrate his style.

Any two prisms, each less than 5V, of the same strength held in apposition and with their base-apex lines at right-angles to each other will equal or be equivalent to a single prism one or two units stronger than one of the prisms, with its base midway of the two bases. For instance, 5 prism-diopters base down meridian 45° combined with a 5 prism-diopter base down meridian 135° will equal a 7 prism-diopter base down meridian 90°.

What is the practical use of a vague statement like this? When is one unit instead of two to be added? What will be the effect of these two prisms when their base-apex lines (or their principal planes) are at any other than a right angle, and what if they are of an unequal strength?

The resultant effect, P, of any two prisms, *p* and *q*, in apposition, with their principal planes at an angle *α* between them, is given by two simple formulæ—

$$P = \sqrt{p^2 + q^2 + 2pq \cos \alpha},$$

and its principal plane is at an angle *θ* with that of *p*, when

$$\tan \theta = \frac{q \sin \alpha}{p + q \cos \alpha}.$$

If the reader's knowledge of mathematics does not permit him to follow these formulæ, it is useless for him to read about resultant prisms; he cannot understand how they act, nor can he prescribe them for his patients.

We are glad to see that Dr. Thorington advocates the use of a cycloplegic before testing the refraction by retinoscopy if reliable results are to be ensured, but he has no confidence in homatropine. He recommends his patients to use 1 per cent. atropine drops three times a day for two days before presenting themselves to him for retinoscopy. If, on the other hand, homatropine is to be used, one drop of a 2.5 per cent. solution is to be placed in each eye at bedtime.

The next morning one drop is to be placed in the eye every hour, from the time of rising until leaving home to go to the surgeon's office. At the office one drop is placed in each eye about every five minutes until six drops have been used; then, after waiting half an hour the refraction is carefully estimated (p. 299).

Most of us in England will think such a procedure unnecessary. On p. 351 the author states that the vision of an emmetropic (or of a corrected) eye under a cycloplegic which sees 6/6 will only see 6/60 with + 2.25 D. and only 6/12 with + 1.25 D.; in fact, that each .25 D. reduces the visual acuity by 1/10. The useful suggestion is that a guess can be often made as to the spherical lens required by noting the line of letters read.

The book is profusely illustrated with 344 figures, some of which are coloured, but a large number seem to be unnecessary. In the preface we read—

The writer has planned to be systematic and practical, so that the student, starting with the consideration of rays of light, is gradually brought to a full understanding of optics.

A mathematical subject cannot be understood without some knowledge of mathematics; the attempt may be daring, but it is doomed to failure. No allusion is made to Duane's excellent work on accommodation, which has recently taught us so much.

LIBRARY TABLE.

A Surgical Handbook for the Use of Students, Practitioners, House Surgeons, and Dressers. By FRANCIS M. CAIRD, M.B., F.R.C.S. Edin.; and CHARLES W. CATHCART, M.B. Edin., F.R.C.S. Eng. & Edin. Seventeenth edition. With 208

illustrations. London: Charles Griffin and Co., Limited. 1916. Pp. 364. Price 8s. 6d. net.—We noticed the sixteenth edition of this excellent handbook less than two years ago. Two pages, 327A and 327B, have now been interpolated in the appendix on Antiseptics in Time of War, describing Lister's curative antiseptic method in compound fracture, and the application of hypochlorous acid in the form of eupad and eusol to septic wounds. If the subject of antiseptics in war time had to be included at all we could have wished it to be more comprehensive in character. It is somewhat astonishing to find that the authors have so little to say on the subject of war surgery in what purports to be an up-to-date surgical handbook—there is, for example, no word concerning either tetanus or gas gangrene—but it is quite likely that the pressure of duties brought about by the war has taken from them all chances of the leisure necessary to collate the wealth of information that now is on record. The prophylactic injection of antitetanic serum is not even mentioned. The remainder of the book is unaltered.

The Eyes of Our Children. By N. BISHOP HARMAN, M.A., M.B. Cantab. *The Care of the Teeth.* By ARTHUR T. PITTS, M.R.C.S., L.R.C.P. Lond., L.D.S. *The Health of the Child.* By O. HILDESHEIM, M.D., B.Ch. Oxon. *The Health of the Skin.* By GEORGE PERNET, M.D. Paris. *The Care of the Body.* By FRANCIS CAVANAGH, M.D. *The Prevention of the Common Cold.* By OLIVER K. WILLIAMSON, M.A., M.D. Cantab. London: Methuen and Co. Price 1s. each.—These little volumes of Methuen's Health Series, the first six to appear, have been written with the object of giving the general public information which, if carefully applied, would add greatly to their health and happiness. Each book is complete in itself and deals, as will be seen from the titles, with a particular region of the body or a particular group of individuals. The appearance of the two volumes concerning children is appropriate at a time when special stress is being laid upon the preservation of child-life. Mr. Bishop Harman's book, in which instruction is given in an attractive manner, should be read by school teachers as well as by parents. The same applies to Mr. Pitts's book, for it is during school life that much preventive work may be done in safeguarding the teeth. The pernicious use of the "dummy" is graphically pictured on p. 70 by the reproduction of a photograph showing the resulting deformity. Dr. Hildesheim deals more with the health of the child in general and the hygienic measures essential to maintaining it. Dr. Pernet's little treatise may help in restricting the harmful use of cosmetics among the young girls to whom munition work has suddenly brought a liberal supply of pocket-money. Dr. Cavanagh gives much information which young workers especially might lay to heart with profit. In the last volume Dr. Williamson deals with a subject of perennial interest, though he does not claim to do more than lay down a code of life which will fortify the body against the common cold. Each book of the series is written in clear and non-technical language.

French and English Dictionary. Compiled by JOHN BELLOWS. Revised and enlarged by WILLIAM BELLOWS. London: Longmans, Green, and Co. 1916. Library edition, cloth, pp. 689. Price 5s. net. Pocket edition, leather, pp. 606. Price 9s. net.—The third edition of this admirable dictionary has made its appearance and will receive the same hearty welcome that has been accorded its predecessors. With all students of French Bellows's dictionary has been popular from the day of its first appearance in 1872 through all its editions and enlargements, for the scope of the work is very large, while the convenient size of issue makes the inclusive character remarkable. From the beginning the late John Bellows, the projector of the work, made the inclusion of technical renderings a special feature of the dictionary, and in continuing and developing these points his son, Mr. William Bellows, the present editor of the dictionary, has been industrious and energetic. Introductory notes acknowledge the good offices of many coöperators, among whom may be mentioned Professor G. Bonet-Mauray, whose practical help in the revision of the work has been extensive, M. Auguste Marrot and M. Gustav Friteau, professor of English at the Lycée Hoche, Brussels, the last two names figuring also on the title-page as collaborators with the editor. The manner in which in this dictionary the genders are distinguished, the indications for pronunciation and for the employment of liaison in French, as well as the brief grammatical schemes, are all alike useful, and we commend the book to the use of all our readers.

New Inventions.

AN IMPROVED BONE-DRILL.

THE accompanying illustrations represent a bone-drill which has been made for me from a design made by Dr.

FIG. 1.

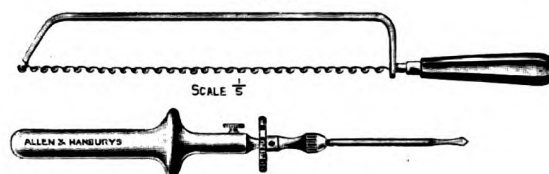


FIG. 2.

G. Ramsey Phillips. As shown in Fig. 1, the drill is fitted into a chuck connected to a toothed wheel which is rotated by a chain stretched on a bow. Fig. 2 shows the drill in use. The great advantage of the instrument consists in the ease with which even the hardest bone can be drilled with the least possible exertion, especially in awkward positions in which the drive is not direct. I have used this drill in a large number of cases of bone-plating and have found it greatly superior to any other design. It is easily cleaned and the whole can be boiled for sterilisation.

Messrs. Allen and Hanburys, Limited, Wigmore-street, W., are the manufacturers.

R. H. JOCELYN SWAN, M.S. Lond., F.R.C.S.
Wimpole-street, W.

A MONOMOTIVE RHEOTOME.

THE above title is the name given by an American firm to a new interrupter of medical electricity currents. The apparatus is a kind of clockwork that moves a drum over which are fixed metallic teeth or pins. A movable lever is fitted over the drum and in its different positions the lever passes over 2, 4, 8, 12, 20, or 40 of those teeth or pins and gives 20, 40, 80, 120, 200, or 400 interruptions in the minute. This apparatus weighs about 4 lb., is quite portable, and free from the inconvenience of having to provide water or mercury as in nearly all other kinds of interrupters. The

weakest part is the spring which has not a uniform movement. After having been wound up the number of interruptions agrees with the number indicated upon the apparatus, but after some 15 or 20 minutes the number is reduced by half and it is necessary to re-wind it or move the lever to the next intersection. The feeling to the patient and the muscular contractions are about the same as with the metronome, and it is quite sufficient for ordinary medical work. The apparatus is manufactured by Mr. A. E. Dean, of Leigh-place, Holborn, London, the cost being less than £3.



THE LANCET.

LONDON: SATURDAY, OCTOBER 7, 1916.

The Future of the War Cripple.

THE problem of converting the fighting man who has been crippled in this war by sea or by land into a useful citizen again is one of appalling magnitude. It is not merely the numbers to be dealt with which constitute the difficulty, but the manysided nature of the problem, which cannot be effectively dealt with unless the several aspects are adequately studied. To do this without omission and without overlapping is a task which may well claim continuous attention from highly trained intellects. To us the difficulties appear to group themselves under three heads—administrative, material, and personal. With the first we are not, as medical men, very intimately engaged. But here one difficulty is both medical and crucial, and concerns the point at which the cripple shall pass from the military organisation into the civilian. So long as he remains in the Services he is the object of care of the hospital, the convalescent home, or the command dépôt. As soon as a Medical Board has decided that he is no longer physically fit for war service the cripple becomes a civilian entitled to a pension, and under the care of the Statutory Committee who pays him the pension. At this point the difficulty arises. The fact of his metamorphosis from soldier to civilian does not imply the desirability of any change in the cripple's treatment. On the contrary, it is of the utmost importance that the treatment should be continuous. It might conceivably be possible to duplicate all the appliances at present in use at command dépôts and convalescent homes—the baths, the mechanical apparatus, the workshops, and so forth—but it would unquestionably be impossible to obtain a duplication of the skilled medical staff to supervise the treatment. It is therefore an urgent administrative necessity that the treatment of the war cripple as soldier and as civilian should form a consistent whole. The Disablement Sub-Committee of the War Pensions &c. Statutory Committee has taken this view and has asked for opportunity to press it upon the Secretary of State for War. The medical profession is also taking action, and the proposal of the Committee of Reference of the English Royal Colleges to extend its purview to these matters was noted in our last issue and is one which we heartily welcome.

The second group of difficulties which we see in dealing with the problem of the war cripple is material, and concerns the means of restoration. The old experience of the man who practised with his artificial arm or leg for an hour or two and then threw it away, or wore it only for show, is not likely to be repeated under present conditions, but the artificial limb still leaves much to be desired. Dr. C. W. HUTT, in an article which appears elsewhere

in this issue, devotes a section to considering artificial appliances for the one-armed. He records the frequent French experience of the workman provided with a carefully devised implement, who places his artificial appliance on the table and works away with his sound arm and stump. The orthopædic staffs of our war hospitals are keenly alive to this situation, and scarcely a week passes without some improvement being introduced in the manufacture or the application of artificial limbs. The type of artificial arm hitherto in ordinary use is by no means as serviceable for all kinds of mechanical application as a simpler apparatus less resembling the real arm, but imitating with exactitude one or more of the actual movements essential to the particular work in hand. Such apparatus are now being devised not only in our own but also in enemy countries, as the pages of the most recent numbers of the military supplement of the *Münchener Medizinische Wochenschrift* abundantly testify. With a further aspect of this question, the provision of suitable occupations for men of various kinds and degrees of disability, Dr. HUTT also deals, and his paper may serve especially to direct attention to the intricacy of the adaptation necessitated. It is clear from his very interesting story that France is well to the front in this matter.

The third group of difficulties in regard to the future of the war cripple centres in many cases round the man himself. Nor is this to be wondered at. After the stress and strain of warfare, the monotony and confinement of illness and convalescence, the prolonged period of military discipline, the crippled soldier would be less than human if, on discharge from the Army, he did not sometimes prefer to draw his pension and to lead an existence free from exertion and ambition, rather than laboriously train himself for a new and perhaps uncongenial form of livelihood. From such a natural inertia has arisen the classical picture of the idle and drunken old soldier of bye-gone times. One potent factor in this melancholy direction has been the fear that any resumption of wage-earning capacity might imply a reduction in the pension to which the crippled soldier is entitled. Sir FREDERICK MILNER, whose work in the interests of the soldiers who have suffered for their country has been unceasing and wonderfully efficient, has rendered a public service in establishing the principle that no soldier shall forfeit any part of the pension allotted to him through making himself a useful citizen, and it is possible that a similar position ought to obtain in France, where one of the Directors of Instruction has put it on record that of 2000 men under his direction, only 350 were willing to learn a trade and to become self-supporting. We have more than once called attention to the part which the Local Statutory Committees under the War Pensions Act may play. By means of personal care and interest in each individual case they should be able to achieve results comparable up to a point to those obtainable by army discipline. We hope that this may be so. Much depends on the work of these Local Committees. In large measure the future of the war cripple as a useful citizen is in their hands.

The Commission of the Faculty of Insurance.

THE Commission instituted by the Faculty of Insurance to inquire into the general position of National Health Insurance, whatever else it may achieve, will make clear many of the points at which the Insurance Acts in their working are most open to criticism and attack. Whether all the opinions of witnesses before the Commission will be accepted by those who have no hostility to the Acts, but only desire to see the fullest possible advantage obtained from them for the public, is another matter. We make, however, here the suggestion that no drastic change of the present system is likely to be inaugurated; at any rate, it will not come until longer experience of National Insurance has taken place under more normal conditions than now prevail. We do not regard, for example, the repeal of the Insurance Acts as within the region of practical politics, or think that such repeal would be largely welcomed either by the public or the medical profession; nor is a change in the system of payment from that under which the medical man is remunerated according to the number of insured persons undertaken likely to be generally introduced. That in many matters affecting the medical profession conditions are unsatisfactory and might be improved is evident, but we are hardly inclined to anticipate agreement on the part of the legislature, with the criticism of a medical witness at Manchester that "the Government made a huge blunder when it handed over the administration of sickness and maternity benefits to Approved Societies." Whether we agree or no with the situation reached, we regard the societies as being for the present in possession of an assured position, and for the time being we believe harmonious coöperation with them, with the definite intent of securing the patient's good, to be the object to be aimed at. If at some future date failure to attain that object can be established, and can be proved to be due to the action of the societies, then, no doubt, their participation in insurance administration would be endangered. These, however, are examples of changes of a revolutionary character which are not likely to be brought about until longer experience has shown them to be necessary; the nation's experience of insurance in time of peace had been of comparatively brief duration when a war intervened, the future effects of which can hardly now be estimated.

There are points, nevertheless, upon which the Commission has bestowed attention, where improvement may fairly be demanded, even though it may not immediately follow. As to these a considerable measure of unanimity may be expected, at any rate on the part of the medical profession, but delay in reform will be due to the financial difficulty which is now accentuated. The sum provided for drugs is inadequate to the extent that at any time a medical man may find himself surcharged, if he prescribes as he would do in the case of a patient who paid for his own medicines. Many medical men are making

larger incomes than they did before they were on the panels, and have every right to do so, for their increased emoluments represent greatly increased work. The point, however, is reached in districts insufficiently supplied with practitioners that too many patients have to be attended in the day to permit sufficient time to be assigned to all of them. The Acts have not been long enough in force to show whether this may some day be remedied by the law of supply and demand. Even then it would be evident that a higher rate of pay will secure more efficient treatment for the patient, by increasing the supply of medical men and by enabling them to make a proper income out of less congested lists. The evidence as to maternity benefit has shown that in many cases it fails entirely to secure the object for which it must be taken to have been instituted. It is apparently habitually devoted in some districts to paying arrears of rent, and in no way tends to promote the physical good of the mother and her infant. Other instances might be given in which attention has been directed by the Commission, not indeed to newly discovered subjects of possible improvement, but to points where reform is genuinely needed, and where effort to obtain it must be made, at any rate when peace returns. The evidence of Mr. MORRIS, secretary of the London Hospital, taken at an early stage of the Commission's proceedings, has been among the most interesting yet heard. Speaking upon a subject strictly within his own experience, he was able to say that the income of his hospital had not suffered through National Insurance, and that an important source of revenue—the collections held by workmen—had not diminished. His evidence was also of importance as to the effect produced by the Insurance Acts upon the work of a great metropolitan hospital. He said that trivial cases treated in the hospital and sent home had diminished by 50 per cent., and that the number of out-patients had appreciably diminished. On the whole, he was satisfied that a multitude of slight cases were now dealt with by medical men on the panels, thus leaving the hospital free for more serious cases. This is one of the results which, it was hoped originally, would be brought about through National Insurance. Progress in this direction has been delayed through the absence of so many medical men from their practices under the conditions of war now prevailing, but this movement in the right direction should later be resumed.

Otherwise, however, than as a means of securing the record of opinions and facts for consideration and future discussion, such an inquiry into panel practice as that instituted by the Faculty of Insurance can hardly be expected to secure definite results at the present time. An enormous number of the working population, in whose interests the Acts were passed, are abroad or absent from their normal occupations on war service. The opinions and experience of these through representatives approved by them are not available; and neither in its broader principles nor in detail is National Insurance likely to be reconstructed without consultation of those most

concerned. The medical profession, equally interested, is in the same position as the patients. It is taking its part in the great war wholeheartedly, and it neither has the opportunity to formulate opinions upon the topics raised, nor, in the case of those on active service, the power to come forward and express them. Moreover, the members of the medical profession actively engaged in the Navy and Army include a preponderating proportion of younger men who have recently entered the medical profession, and who, above all, are interested in the future conditions of their career. National Insurance, with its merits and demerits, is being worked in circumstances which render criticism altogether unsatisfactory and inconclusive. Literally thousands of panel practitioners are away from their practices, and their colleagues are struggling to cope with the needs of the civil population, insured and uninsured. No system of medical service upon a large scale for the benefit of the working classes could yield results under such conditions which would not be open to unfavourable estimate in some aspects, and it is impossible to discuss the past working of the Act, either from the point of view of the public or the medical profession, without remembering that it is more than two years since war was declared. In those two years much might, and certainly would, have been done in the direction of amendment and alteration, which must now be postponed until we have peace; and, it must be added, until we are able to realise the position in which peace will find us. Financial, political, social, and economic conditions will not then be the same as in 1914, and all these things will have to be taken into consideration. The Commission of the Faculty of Insurance will have done all that can be expected of it when it has collected and issued evidence for our future guidance. With regard to the points of interest to the medical profession, that evidence will be useful if it assists in the formulating of a definite policy upon each of the various questions raised—if, that is to say, it helps individual members of the profession towards unanimity and towards combining to obtain under a National Insurance scheme an improved medical service for their patients and a satisfactory position for themselves.

MEDICAL MEN AS LEGISLATORS.—Of the 47 members who compose the new Legislature of British Columbia, elected recently, six are doctors.

DONATIONS AND BEQUESTS.—By the will of the late Miss Sarah Broom MacNaughtan, the well-known novelist and traveller, the testatrix left £1,000 to the Hospital for Women, Euston-road. Miss MacNaughtan had been a devoted ambulance worker since the war broke out in Belgium, France, and Russia, and her life was sacrificed to the hardships which she underwent.

ST. BARTHOLOMEW'S HOSPITAL MEDICAL SCHOOL.—The following awards of entrance scholarships at this school have been announced:—1. Entrance scholarship in Arts of the value of £100 for one year awarded to E. H. Weatherall, of the Bolton Grammar School, Bolton. 2. Senior entrance scholarships in Science, value £75 each for one year, awarded to C. F. Krige, of Hertford College, Oxford, and A. G. Shurlock, of Jesus College, Cambridge. 3. Junior entrance scholarship in Science, value £150 for one year, awarded to C. H. Andrewes, of Highgate School.

Annotations.

"Ne quid nlmis."

THE CAMPAIGN AGAINST VENEREAL DISEASE.

FREE post-graduate courses of instruction in the diagnosis and treatment of venereal diseases at the Military Hospital, Rochester-row, Victoria, S.W., have been arranged by Lieutenant-Colonel L. W. Harrison, D.S.O., R.A.M.C., in conjunction with the Panel Committee for the County of London. The London County Council are making arrangements with several of the metropolitan hospitals to establish special out-patient clinics for the treatment of persons suffering from venereal diseases. It is expected that facilities will be afforded for general practitioners in the neighbourhood of the hospitals to coöperate in the work of these clinics. Practitioners on the panel will desire to prepare themselves for taking an active part in the treatment of cases of syphilis and gonorrhœa following on the return of our armies by attendance at one of the courses. The first four weeks' course will consist of three lectures and practical classes by Lieutenant-Colonel Harrison at 3 o'clock on Tuesday, Wednesday, and Thursday, Oct. 10th, 11th, and 12th. The set demonstrations will be given each morning at 11.30 and continue till 1. The departments are open to the class from 10.30. The rota of the attendance at the practical classes in the three succeeding weeks will be arranged, as far as possible, to suit the convenience of the members as indicated in the particulars given on the form of application. Tickets of admission and further particulars can be obtained only from Dr. Richmond, Secretary of the Panel Committee for London, Staple House, 51, Chancery-lane, W.C.; applications should not be made to the Military Hospital.

PUBLIC BATHS IN NORWAY.

WITH the support of the Norwegian chief medical officer and the assistance of many Norwegian medical men, Dr. C. Römcke, has published¹ a full account of the facilities for obtaining baths enjoyed by the members of the public in Norway, both town and country. Among 55 of the chief towns, with populations varying from Christiania's 250,000 to Svelvik's 1000 inhabitants, all but five have public bath-houses, apart from baths for the school-children. The public bath-houses may be either communal or of private ownership, and may provide hot baths of three varieties, the douche bath, the tub bath, or the bath in a bath-room. The douche bath is naturally the cheapest, costing in various localities from 1*d.* to 3*d.*; the bath-room bath comes next in cost, and may be had at various prices, in accordance apparently with the amount of service given by the attendants. Thus at Christiania one may spend from 2½*d.* to 2*s.* 6*d.* on a public bath-room bath. The tub-bath has the highest minimum price, about 6*d.* in many places; experience shows that the men prefer the bath-room, while the women prefer the more private tub-bath. Many towns are provided with cellar school baths for the school children; thus at Christiania there are 21 schools and 21 school baths, and in 44 Norwegian towns there are 124 schools with 48 school baths and 14 hired baths between them.

¹ Tidsskrift f. d. Norske Lægeforening, Christiania, 1916, xxxvi., 726.

In other towns the school-children have access to the public baths; in some instances at the public expense. Dr. Römcke remarks that the internal arrangements of many of these baths leave much to be desired; it is essential that each child should have a cubicle for undressing and dressing, and until this rare provision becomes general it will not be possible to enforce a weekly or fortnightly hot bath for each child. Naturally, therefore, baths at home are widely used by men, women, and children alike. In the country the provision of public hot baths is less satisfactory than it is in the towns. The chief problem is the heating of the water; the expense here is often lessened by attaching the baths to establishments already provided with furnaces or boilers. Thus, Dr. Römcke tabulates 81 factories with baths attached, 25 dairies, 8 mines, 6 institutions; he also details 34 public baths, 31 school baths, 23 nursing homes and 21 homes for the aged with baths, in Norwegian country districts. He expresses surprise and regret at the small number of the public baths attached to the many dairies in the country, and notes that the public baths can rarely be self-supporting institutions; he advises that they should be financed by the public authority or the savings banks. He adds that public electric supplies are common, but that the electric heating of water for public baths is not a practical proposition at present, speaking generally, although it may be found in large electricity works and in some private houses. It is a curious fact, considering the geography of the country, that the proportion of Norwegians who can swim is small, the number of deaths in Norway from drowning being about 600 a year. Only about 12 per cent. of all the school-children between the ages of 12 and 15 have learnt to swim; the percentage of swimmers is low in the public schools, but higher in the board schools where the children between 10 and 15 years of age must have at least 20 hours' instruction in swimming. This instruction is given partly in water, we are told, and partly on land—the so-called dry-swimming! In June, 1913, 65 courses of instruction in swimming were given to some 1550 school-children in Christiania; only 850 of them learnt how to swim.

THE PLUMBER AS MUNITION MAKER.

FOR the obvious reason that good, faithful, scientific plumbing forms one of the greatest protections to a community from the spread of infectious disease we take a real interest in the work of the Plumbers' Company, and we noted last year that under the ægis of the Company many plumbers were working at the manufacture of shells. In normal times the labour sufficient to deal with the required output of such material is associated in the Union of Lead-burners, but the limited numbers of this union proved quite inadequate for the work when war broke out. The organisation of the Plumbers' Company throughout the country proved then of valuable assistance to the Ministry of Munitions, for in the plumber the country had a munition worker nearly trained. With the help of the Lead-burners Lodge of Canning Town some hundreds of plumbers have been instructed in this very technical work, and have not only met our own needs, but many have been drafted to the help of the Allies. The plumbers naturally proved apt pupils; they were trained either at the Laboratory of the Plumbers' Company at King's College or at the Technical School of the London County

Council at Brixton, the London County Council entering heartily into the work promoted by the Company. At the Guildhall on Sept. 20th a special Court of the Plumbers' Company was held under the Mastership of Mr. W. D. Caroe, M.A., R.I.B.A., to offer the Company's thanks and congratulations to representatives of the Operative Lead-burners and Plumbers who had so willingly contributed to a result so satisfactory, also to bestow the Freedom of the Company upon Mr. W. H. M. Smeaton, himself a plumber, and late secretary to London Council for the Registration of Plumbers, on his appointment by the Indian Government to the post of inspector of plumbers at the Royal Cordite Factory of the Madras Presidency. The process of lead-burning, hitherto confined to a very limited number of men, is one essential to the production of the plant necessary for chemical industries. Especially is it so in the dyeing trade for long monopolised by Germany, which it is hoped will, under Government encouragement, be revived in this country.

CHORION-EPITHELIOMA.

IN the great majority of cases a chorion-epithelioma owes its origin to a previous pregnancy, normal or abnormal. The frequency with which these tumours are preceded by a hydatidiform mole proves that there is some causal relationship between the two conditions. In how many cases a chorion-epithelioma is likely to follow a mole of this description is a more difficult question to decide, and the data we have at our disposal for answering it are rather scanty. Of 22 cases observed for varying periods up to 20 years, in only 2 did the patients die from a condition which might have been a chorion-epithelioma, while in 13 per cent. of another series of 49 cases such a condition may have supervened. The figures proving the relationship of pregnancy to chorion-epitheliomata are more definite. Thus, of 455 collected cases in only 6 was the occurrence of a previous pregnancy at all doubtful, while in 12 of the cases the pregnancy had been situated in the tube. The primary site of the tumour may be the uterus—the most common—or it may occur in the tube, or it may even originate outside the genital tract in a detached placental embolus. In a few of the recorded cases many years have elapsed since the last pregnancy and the menopause even may have intervened; for example, two cases of this kind have been published—in the first the last pregnancy had occurred ten years before and the patient was 11 months over the climacteric, while in the second the last abortion had taken place 21 years previously and the menstrual periods had ceased for one year. Even in the absence of amenorrhœa, we cannot assert that a married woman has not had an early abortion, and it is generally impossible to prove that a woman who develops a chorion-epithelioma has never been pregnant. We publish in this issue the notes of an interesting case of chorion-epithelioma under the care of Dr. H. Neville Taylor. There is another variety of these growths, much less frequently met with, in which the tumours occur in the neighbourhood of, or in the tissue of, the ovary or of the testis. These tumours occur quite independently of pregnancy, and represent the class of chorion-epitheliomata developing in various kinds of teratomata. In some instances undoubtedly they are examples of malignant degeneration in

the tissues of a teratoma, while in other cases there is little but the malignant growth to be recognised and the exact nature of the tissue from which it originated cannot be determined. Now that our knowledge of the embedding of the early ovum is so much more complete, it is evident that this type of new growth forms a most striking example of a physiological function which has, so to speak, run riot. The early trophoblast has the power of destroying the maternal tissues, and in this way the developing ovum embeds itself in the tissues of the uterus or of the tube, and provides for its early nutrition. The maternal tissues are supposed to protect themselves from undue damage by the development of the decidual cells, and the special liability of the tube to be damaged extensively may be explained by the relatively poor development of the decidua in this situation. In the case of a chorion-epithelioma this destructive power of the foetal cells has developed to such an extent that it acquires a malignant character and ultimately leads to the death of the host. Why in any given case the epithelial cells of a hydatidiform mole should be capable of this destructive action we are entirely ignorant. We do, at any rate, know that such a catastrophe is, happily for the patient, of rare occurrence. The secondary deposits in a case of chorion-epitheliomata, more frequently than in any other kind of malignant tumour, not infrequently disappear. Cases have been recorded in which such growths in the vagina or vulva have sloughed out, and instances are not infrequent in which patients presenting the physical signs of secondary growth in the lungs have ultimately completely recovered. Another curious problem connected with these tumours is the relation to them of the lutein cysts of the ovaries, which are so often met with. Ovarian cysts also may occur which are not of lutein origin, but whether this is more than a mere coincidence is uncertain. That the small lutein cysts will shrink and disappear after the removal of the mole seems certain, but we are not aware of any evidence that ordinary ovarian cysts accompanying such tumours will do the same thing. No doubt one day the problem will be solved, when our knowledge of the internal secretions of the ovaries is more perfect; in the meantime, we can only collect facts and wait for the complete elucidation of the causation of this particular variety of cancer in women. All cases should be most carefully noted and reported.

THE "PHARMAKOS."

In an article contributed to *Folk-lore* Mr. Morley Roberts deals learnedly with the "Pharmakos" or Scape-Goat of the ancient Greek festival celebrated in the month of May and known as the Thargelia. At this festival, according to the *Lexicon of Harpocration*, *sub voce Pharmakos*, quoted by Sir James Frazer in the "Scapegoat" volume of the "Golden Bough," two victims, one to represent the men and another the women, were led out at Athens and stoned to death in order to avert evils and purify the city. As a rule, says Frazer, when speaking of Greek custom at large, "when a city suffered from plague, famine, or other public calamity, an ugly or deformed person was chosen to take upon himself all the evils which afflicted the community. He was brought to a suitable place, where dried figs, a barley loaf, and cheese were put into his hand; these he ate. Then he

was beaten seven times upon his genital organs with squills and branches of the wild fig and other wild trees, while the flutes played a particular tune. Afterwards he was burned on a pyre of wood of forest trees; and his ashes were cast into the sea." Mr. Morley Roberts is chiefly concerned with the philology of the word "pharmakos," which is related to "pharmakon" (medicine), but in its original sense had no connexion with the idea of drugs or remedies; it referred rather to a custom in use among primitives of driving out evil spirits, such as those of disease, with a whip or with blows. The Greek word *pharmakos* was probably of foreign origin. Something very similar to it is found in the Turkic tongues, where *vourmak* means "to whip"—compare with the Latin *verber*. The root *vour* seems to have been the same in both the Turkic and so-called Aryan groups of languages. Thus in Greek "pharmakeuo" means "I give drugs or poisons," but anciently, Mr. Morley Roberts writes, it probably "implied an early medicine man, a Shaman, something equivalent to those found with all their ritual among the Africans and Central Asians. Thus *pharmakeuein* means, as it would with early races, 'to drive out evil spirits with a whip, or with blows.' Such a connotation is, on my theory, earlier than 'to give poisons,' but one knows that the ritual of the savage cure largely consists in driving out the spirit of disease or witchcraft by noisy incantations or by actual physical ill-usage of the patient." Thus trephining among savages has been held to be a mode of expelling an evil spirit or noxious foreign body from the head, and "pharmacist" had perhaps for an early meaning "exorcist." All over the East the word *farmaçion* is in use to denote "an outlaw," and Mr. Roberts believes that "*farmaçion*" is actually the same word as *pharmakos*.

THE NATIONAL MISSION.

In November next the various religious bodies into which this nation is divided will unite in a National Mission, whose object is to rouse the people to a more vivid realisation of its spiritual life. Repentance and Hope are the twin watchwords of the Mission, the part played by Repentance being based on the dictum that even when we have done our all we are still unprofitable servants; and the Hope is that when we emerge from the furnace of war we shall find ourselves purified and strengthened for the never-ceasing fight against selfishness, luxury, and class divisions. No nation ever has risen to and endured in greatness without religion, and we may define "religion" in its widest sense in the words quoted by Mr. Warde Fowler as "the effective desire to be in right relation to the Power manifesting itself in the universe."¹ The literature of two of the great nations of antiquity has preserved for us the expression of this feeling. In the forty-fourth Psalm, which presumably was written during or in allusion to the Antiochan persecutions, the writer says, after recounting the national sufferings:—"And though all this be come upon us, yet do we not forget Thee; nor behave ourselves frowardly in Thy covenant." Again, in the year B.C. 390 the city of Rome was sacked and burned by the Gauls, and a movement was set on foot to desert the ruined city and move to Veii. The speech of Camillus, as

¹ Warde Fowler: *The Religious Experience of the Roman People*, p. 8; Macmillan, 1911.

given by Livy (Book V., cap. 51), in opposition to this course, shows how even then violation of the law of nations was looked upon as wrong, and "religion" was regarded as the guide. The great Roman points out that the Roman people had disregarded an oracular prediction, that their ambassadors had outraged the law of nations, and, still worse, that the people had condoned the outrage; therefore, he says, judgment had fallen upon the city. But he proceeds: "Deorum cultum, deserti ab Diis hominibusque, tamen non intermisimus"—deserted as they were by gods and men yet the Divine worship continued to be carried on. Our own land, our capital, and our people have not as yet suffered to so great an extent as the ancient Romans or the Jews, or, indeed, so much as many of our Allies, and yet there is scarcely a house in this country where there is not some association with one lost or sorely stricken, while the mass of us is daily facing death in the cause of righteousness and of a lasting peace. It is for those who have to stay at home to do their part not merely in the active work of munition-making, not only in conducting with all their might the business of the country, and not only in seeking every opportunity for succouring those whom fate has hit more hardly than themselves; we must cultivate "self-reverence, self-knowledge, self-control," and the sure way here is through the development of the spiritual side of ourselves. That this development has already begun is obvious to anyone who has eyes to see—the bounteous charity that has been instituted on all sides and the disappearance of class differences are alike the proofs. It is possible, though difficult, to have a healthy mind in an unsound body—witness the many saints, both ancient and modern, who have been weakly of physique. But it is impossible to have a really healthy body with an unsound mind. Hence, from the physician's point of view the National Mission should be welcomed, while the meeting should not be of those "conscious of each other's infirmities," but of those conscious of their own.

THE Harveian Oration of the Royal College of Physicians of London will be delivered before the College on Wednesday afternoon, Oct. 18th, by Sir Thomas Barlow, formerly President of the College.

A CONFERENCE of Local Medical and Panel Committees, convened by the Insurance Acts Committee of the British Medical Association, will be held in the Crown Room of the Connaught Rooms, Great Queen-street, Lincoln's Inn Fields, W.C., on Thursday, Oct. 19th, at 10 A.M. The conference will be continued on the following day if the length of the proceedings renders this necessary.

At the first autumn meeting of the Medical Society of London on Oct. 9th, the incoming President, Lieutenant-Colonel D'Arcy Power, will deliver an address on "John Ward and His Diary." Other discussions and papers already arranged are: Oct. 23rd, Mr. David McCrae Aitken, demonstration of cases illustrating Orthopaedic Principles and Methods in Military Surgery; Nov. 3rd, discussion on Epidemic Nephritis, introduced by Captain Langdon Brown; Feb. 12th, Surgeon-General H. D. Rolleston, R.N., paper on Naval Medicine in the Great War. In each case the time is 8.30 P.M. The Lettsomian lectures will be delivered by Colonel Cuthbert Wallace, A.M.S., and the oration by Sir William Osler.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Local Government Board and Substitutes of Military Age.

THE Local Government Board has recently issued a circular letter to boards of guardians dealing with the subject of the employment of substitutes who are of military age. The Board recalls that last November it advised boards of guardians that vacancies occurring after that date in the Poor-law Medical Service should not be filled permanently until the termination of the war, and that in the interval the best temporary arrangements should be made for the discharge of the duties of such offices. Unfortunately, it has happened that in many cases guardians have employed as their temporary officers newly qualified practitioners eligible for military service. Similar appointments were frequently made in the case of substitutes for medical officers who had temporarily left their districts for service with the Royal Army Medical Corps. The Local Government Board now reminds boards of guardians that the demand of the military authorities for young medical men is still urgent, and that guardians should avoid giving any inducement to medical men of military age to seek civil work. The Board suggests that where a vacancy occurs, the guardians should assign the post to a medical man holding a permanent local appointment, or the duty might be divided between two or more such medical officers. Only as a last expedient should a separate medical officer be temporarily appointed, and then the selection should as far as possible be limited to doctors who are over 45 years of age, or otherwise ineligible for military service. The guardians should invite the co-operation of their medical officers in this matter and request their views as to the best means for filling the temporary vacancies for the period of the war.

The Numbers of the Insured.

The impossibility of estimating, with any approach to accuracy, the number of insured people in any given insurance area is a source of much trouble, since both the sanatorium and the certification grants are distributed on the basis of such numbers. The county or county borough index of insured gives an exaggerated as well as an incorrect estimate, since it includes persons who have moved into other areas as well as soldiers. It is believed that the indexes exaggerate the true numbers by about 25 per cent. For instance, at the last monthly meeting of the County Armagh Insurance Committee the clerk mentioned that there were 27,528 insured persons in County Armagh on the books, but the Insurance Commissioners in the amount credited to the County Insurance Committee for the treatment of cases of tuberculosis were only allowing for 20,480. The Commissioners have not stated the grounds on which their estimate is based, and it is natural that both insurance committees and medical men are concerned at the apparent shortage in the grants.

The Notification of Pulmonary Tuberculosis in Belfast.

Attention was drawn in your columns a fortnight ago to the fact that in the July returns of infectious diseases there was only one notification of tuberculous phthisis in Belfast, while it would seem that many cases of pulmonary tuberculosis were being treated in various Belfast institutions. The public health statistics dealing with the week ending Sept. 16th and the week ending Sept. 23rd present the same curious feature. In Dublin during the former week there were 50 notifications of tuberculous phthisis, while only 1 case was notified at Belfast; in the second of the two specified weeks there were 46 notifications of tuberculous phthisis in Dublin and only 1 in Belfast.

An Outbreak of Enteric Fever in Co. Roscommon.

An outbreak of enteric fever has recently occurred at Hillstreet in the Carrick-on-Shannon No. 2 rural district of the County Roscommon. So serious has it been that the police authorities have been obliged to close the barracks, and to remove their men from the district. It was found that all the persons affected had obtained their drinking water from wells which were liable to surface contamination of both animal and vegetable origin. Mr. P. F. Doorly, the medical officer of health, had previously drawn the attention of the sanitary authority to the necessity of providing a pump for the use of the

inhabitants of the village. Professor E. J. McWeeney, on his bacteriological examination of the samples of the public water-supplies at Hillstreet, condemned one sample outright, regarded with suspicion two of the four samples supplied to him, and considered the fourth a "border-line" water. In face of this bacteriological report and of the strong representations of the Local Government Board, the rural district council, as local sanitary authority, made an order that in its opinion the water-supply of Hillstreet was adequate, and that the fever had been imported into the district. It remains to be seen what steps the Local Government Board will take to compel the local authority to carry out its duties.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Sanitary Squads in the Army.

THE Under Secretary of State for Military Hygiene has arranged for the immediate appointment in each district of so-called sanitary squads, to be attached to the armies in the field with a view of effectively applying the methods of hygiene and public health in camps and cantonments. Each squad is to include 15 men of the auxiliary service chosen from the youngest age-groups. On the technical side, under the command of an auxiliary pharmacist, the squad will be furnished with a staff comprising a sergeant and two corporals. The men of these squads will receive special instruction, theoretical and practical, in the general hygiene of troops in the field, especially as regards the following points: disinfection of dwellings, white-washing, disinfection of privies and closets, the care of the manure-heap, measures against flies and stinging insects, incineration of excreta, baths, destruction of lice, putrefaction, and protection of drinking water. Each member of the squad will, as far as possible, be specially trained in one item of the programme in order that he may, when necessary, direct a fatigue party which has received no hygienic instruction. The squads will exercise special and continuous supervision in places where troops are continually on the move. Arrangements have been made to bring this new sanitary measure into force by Oct. 15th.

Death of Dr. Valentin Magnan.

The death has recently occurred, at the age of 80 years, of Dr. V. Magnan, one of the most illustrious and venerated names in contemporary French psychiatry. Born at Perpignan, resident officer in hospitals at Lyon in 1858 and Paris in 1863, he was appointed to the Asile St. Anne in 1867, and for more than 40 years continued to occupy this post. Magnan possessed the gift of unusual clinical discernment and of exact description, and his efforts to establish a rational classification of mental disorders bore fruit. His clinical and systematic lectures in the Asile attracted many students and still more qualified men. He was a great teacher. The principal works which established his fame were on mental degeneracy, chronic delirium, *folie intermittente*, epilepsy, aphasia, alcoholism, and absinthism. In 1893 he was elected to the Academy of Medicine in the Section of Hygiene and Forensic Medicine, and of the latter he became President. On the forensic side he was firm, penetrating, and luminous. To him is due the generalisation of the method of no-restraint. He liberated from cellular confinement and the strait-jacket nearly all the violent patients under his care, and by means of systematic attention produced a great improvement in their condition. His method has been universally followed in France.

Antityphoid Vaccination in the French Navy.

M. Chantemesse has communicated to the Academy of Medicine the results obtained from antityphoid inoculation in the French Navy, where preventive inoculation is compulsory. In a group of 80,000 men vaccinated completely or incompletely, 136 cases of typhoid or paratyphoid occurred, with 10 deaths (7 per cent. mortality). In a group of 60,000 non-vaccinated, 525 cases of the same diseases occurred with 77 deaths (14 per cent. mortality). M. Chantemesse's present practice is to prepare complete vaccinal doses of typhoid and paratyphoid bacilli, incorporating them in an oily solution composed of sesame oil, a little oleate of cholesterin, and purified neutral lanolin. With this preparation only one injection is necessary, and the resulting immunity lasts one to two years. The injection is painless.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

Deputy Surgeon-General J. L. Smith, M.V.O., to be Surgeon-General.

Fleet-Surgeon J. H. Stenhouse to be Deputy Surgeon-General.

ARMY MEDICAL SERVICE.

Surgeon-General T. J. O'Donnell, C.B., D.S.O., to rank as Lieutenant-General whilst employed as Director of Medical Services in India.

Lieutenant-Colonel A. K. Kennedy, R.A.M.C., to be Colonel, vice Colonel J. C. Morgan.

ROYAL ARMY MEDICAL CORPS.

The undermentioned relinquish their temporary rank on re-posting:—Lieutenant-Colonel (Temporary Colonel) M. Boyle, Lieutenant-Colonel (Temporary Colonel) N. Tyacke, Captain (Temporary Major) P. S. Stewart, and Captain (Temporary Major) W. E. Marshall.

The undermentioned to be temporary Colonels whilst Assistant Directors of Medical Services of Divisions: Lieutenant-Colonel T. K. Maurice, Lieutenant-Colonel W. H. S. Nickerson, V.C., C.M.G., Lieutenant-Colonel F. S. Penny, C.M.G., Brevet-Colonel H. Ensor, D.S.O., and Lieutenant-Colonel P. MacKessack.

Major E. E. Powell, from supernumerary list, to be Lieutenant-Colonel.

Temporary Lieutenant-Colonel W. P. G. Graham relinquishes his commission on account of ill-health.

Captain R. E. Todd is restored to the establishment.

The undermentioned temporary Captains to be temporary Majors: J. B. Stephens and G. H. Ross.

Temporary Captains relinquishing their commissions: N. Black, F. R. Featherstone, M. McK. McRae, and T. D. Jago.

Temporary Lieutenants to be temporary Captains: F. K. Kerr, J. C. Walker, and H. S. Raper.

Temporary Lieutenants relinquishing their commissions: J. T. Bowman, D. A. Volume, D. L. Dick, C. T. Galbraith, E. M. Pearse, B. F. Keillor, A. P. Robertson, W. Girdwood, F. C. Stewart, J. F. Wood, J. F. Lambie, L. B. Burnett, and Carl W. Von Bergen.

F. D. Saner to be temporary Lieutenant.

R. A. Holmes to be temporary Honorary Lieutenant whilst serving with No. 8 British Red Cross (Baltic and Corn Exchange) Hospital.

TERRITORIAL FORCE (R.A.M.C.).

Eastern General Hospital: Captain H. M. Galt resigns his commission.

South Midland Field Ambulance: Lieutenant E. G. Anderson to be Captain.

London Sanitary Company: Lieutenant W. Johnstone to be Captain.

Supernumerary for service with the Officers Training Corps.—Lieutenant A. Macphail to be Captain.

Attached to Units other than Medical Units.—Captain S. Southam relinquishes his commission on account of ill-health.

TERRITORIAL FORCE RESERVE (R.A.M.C.).

Major W. V. Sinclair, from London Field Ambulance, to be Major.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The September number of this journal opens with an interesting paper on Inoculation and Infective Agglutinins Determined by Absorption Methods, in which the author, Professor I. Walker Hall, who had the assistance of Mr. I. L. Hiles, M.Sc., and Mr. F. Nichols, records some of the results of a routine examination of cases of paratyphoid fever in the relation between the immunity obtained by prophylactic methods and that conferred by disease. A short note on Weil's Disease (Spirochaetosis Icterohæmorrhagica), as it has occurred in the army in Flanders, is contributed jointly by Captain Adrian Stokes and Captain John A. Ryle; a Report on the Later Results of Gunshot Wounds of the Head, by Lieutenant-Colonel P. Sargent and Lieutenant-Colonel G. Holmes, states, as one of the chief conclusions, that there are no grounds for supposing that more radical operations abroad are called for; and a paper on the Extent and Nature of the Sensory Loss in Musculo-spiral Paresis, by Lieutenant J. Renfrew White, deals with a matter which has received some attention during the war. In a series of 20 cases of injury to nerve-trunks of the upper limbs collected by the writer during the earlier months of the war, the musculo-spiral was involved in six cases; in half of these it was the only nerve to suffer, in the other three there was a concomitant injury to at least one other trunk. The current issue also contains a further contribution by Dr. E. C. Hort and Captain A. H. Caulfield (C.A.M.C.), on Epidemic Cerebro-spinal Fever: the Place of the Meningococcus in its Etiology.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census 7505 births and 4480 deaths were registered during the week ended Saturday, Sept. 30th. The annual rate of mortality in these towns, which had steadily increased from 10.5 to 12.8 per 1000 in the six preceding weeks, further rose in the week under notice to 13.5 per 1000 of their aggregate civil population, estimated at 17,312,295 persons for the year 1915. During the 13 weeks of the quarter just ended the mean annual rate of mortality in these towns averaged 11.4, against 11.1 per 1000 in London. Among the several towns the death-rate last week ranged from 3.2 in Ealing, 7.2 in Warrington, 8.0 in Tottenham, 8.1 in Northampton, and 8.5 in Exeter, to 19.0 in Sunderland and in Southport, 19.7 in Tynemouth, 20.4 in St. Helens, 21.1 in Gateshead, and 24.8 in Wakefield.

The 4480 deaths from all causes were 236 in excess of the number in the previous week, and included 488 which were referred to the principal epidemic diseases, against 594 and 548 in the two preceding weeks. Of these 488 deaths, 384 resulted from infantile diarrhoeal diseases, 40 from diphtheria, 23 from measles, 20 from whooping-cough, 11 from enteric fever, and 10 from scarlet fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1.5, against 1.7 per 1000 in the previous week. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had been 457, 477, and 448 in the three preceding weeks, fell to 384, and included 90 in London, 40 in Liverpool, 19 in Birmingham, 15 each in Manchester and Hull, 13 each in Leeds and Sheffield, and 12 in Bristol. The deaths attributed to diphtheria, which had been 47, 35, and 39 in the three preceding weeks, were 40 last week, of which 8 were registered in London and 3 in Birmingham. The fatal cases of measles, which had declined from 50 to 21 in the four preceding weeks, slightly rose to 23, and included 9 in London and 2 each in Birkenhead and Sheffield. The deaths referred to whooping-cough, which had been 28, 33, and 28 in the three preceding weeks, fell to 20; 3 deaths occurred in London and 2 each in Birmingham, Sunderland, and Gateshead. The deaths attributed to enteric fever, which had been 7, 9, and 4 in the three preceding weeks, rose to 11, of which 2 were registered in London. The fatal cases of scarlet fever, which had been 4, 11, and 8 in the three preceding weeks, rose to 10, and included 2 in Newcastle-on-Tyne.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 990, 980, and 1012 at the end of the three preceding weeks, rose to 1020 on Saturday last; 151 new cases were admitted during the week, against 142, 130, and 158 in the three preceding weeks. These hospitals also contained on Saturday last 1294 cases of diphtheria, 91 of measles, 63 of whooping-cough, and 36 of enteric fever, but not one of small-pox. The 1114 deaths from all causes in London exceeded the number in the previous week by 146, and corresponded to an annual death-rate of 13.5 per 1000. The deaths referred to diseases of the respiratory system, which had increased from 66 to 109 in the four preceding weeks, further rose to 131 in the week under notice.

Of the 4480 deaths from all causes in the 96 towns, 215 resulted from violence, 390 were the subject of coroners' inquests, and 1316 occurred in public institutions. The causes of 45, or 1.0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, Hull, and in 68 other smaller towns. Of the 45 uncertified causes, 8 were registered in Birmingham, 7 in Leyton, 5 in Liverpool, 4 in St. Helens, and 2 each in London, West Bromwich, and South Shields.

HEALTH OF SCOTCH TOWNS.

IN the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year 975 births and 661 deaths were registered during the week ended Saturday, Sept. 23rd. The annual rate of mortality, which had been 14.3, 13.1, and 13.0 per 1000 in the three preceding weeks, rose to 14.5 per 1000 in the week under notice. During the 12 weeks of the current quarter the mean annual death-rate in these towns averaged 12.5, against 11.2 per 1000 in the large English towns. Among the several towns the death-rate during the week ranged from 6.4 in Kirkcaldy, 9.2 in Falkirk, and 11.1 in Motherwell, to 16.0 in Clydebank, 17.1 in Ayr, and 18.1 in Greenock.

The 661 deaths from all causes were 70 in excess of the number in the previous week, and included 104 which were referred to the principal epidemic diseases, against numbers

declining from 88 to 72 in the three preceding weeks. Of these 104 deaths, 83 resulted from infantile diarrhoeal diseases, 6 from whooping-cough, 5 from diphtheria, 4 from measles, and 3 each from enteric fever and scarlet fever, but not one from small-pox. The annual death-rate from these diseases was equal to 2.3, against 1.7 per 1000 in the large English towns. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had been 61, 56, and 50 in the three preceding weeks, rose to 83, and included 60 in Glasgow, 7 in Edinburgh, 6 in Dundee, and 3 in Greenock. The deaths referred to whooping-cough, which had been 3, 5, and 7 in the three preceding weeks, were 6 in the week under notice, of which 3 occurred in Glasgow. The fatal cases of diphtheria, which had been 9, 6, and 6 in the three preceding weeks, numbered 5, and comprised 2 each in Glasgow and Edinburgh and 1 in Aberdeen. The deaths attributed to measles, which had been 8, 10, and 4 in the three preceding weeks, were again 4, but showed no excess in any particular town. The fatal cases of enteric fever were recorded in Glasgow, Aberdeen, and Ayr, and those of scarlet fever in Glasgow, Edinburgh, and Perth respectively.

The deaths referred to diseases of the respiratory system, which had been 57, 45, and 49 in the three preceding weeks, rose to 62 in the week under notice, but were 24 below the number registered in the corresponding week of last year. The deaths from violence numbered 41, against 25 and 27 in the two preceding weeks.

IN the 16 largest Scotch towns 987 births and 618 deaths were registered during the week ended Saturday, Sept. 30th. The annual rate of mortality, which had been 13.1, 13.0, and 14.5 per 1000 in the three preceding weeks, fell to 13.6 per 1000 in the week under notice. During the 13 weeks of the quarter just ended the mean annual death-rate in these towns averaged 12.6, against 11.4 per 1000 in the large English towns. Among the several towns the death-rate during the week ranged from 4.6 in Falkirk, 5.7 in Clydebank, and 6.9 in Coatbridge, to 15.4 in Greenock, 16.5 in Dundee, and 16.8 in Kilmarnock.

The 618 deaths from all causes were 43 below the number in the previous week, and included 75 which were referred to the principal epidemic diseases, against 72 and 104 in the two preceding weeks. Of these 75 deaths, 50 resulted from infantile diarrhoeal diseases, 9 from diphtheria, 6 from scarlet fever, 5 from measles, 4 from enteric fever, and 1 from whooping-cough, but not one from small-pox. The annual death-rate from these diseases was equal to 1.6, against 1.5 per 1000 in the large English towns. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had been 56, 50, and 83 in the three preceding weeks, fell to 50, and included 35 in Glasgow, 3 each in Dundee and Greenock, and 2 each in Edinburgh and Aberdeen. The deaths attributed to diphtheria which had been 6, 6, and 5 in the three preceding weeks, rose to 9, and included 3 each in Glasgow and Paisley. The fatal cases of scarlet fever, which had been 5, 3, and 3 in the three preceding weeks, rose to 6, of which 2 occurred in Glasgow. The deaths referred to measles, which had been 10, 4, and 4 in the three preceding weeks, numbered 5, and included 3 in Glasgow. The 4 deaths attributed to enteric fever were 3 in excess of the average in the earlier weeks of the quarter, and were recorded in Dundee, Aberdeen, Greenock, and Kilmarnock respectively. The fatal case of whooping-cough was registered in Edinburgh.

The deaths referred to diseases of the respiratory system, which had been 45, 49, and 62 in the three preceding weeks, further rose to 72 in the week under notice, but were 21 below the number registered in the corresponding week of last year. The deaths from violence numbered 25, against 37 and 41 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

IN the registration area of Dublin 181 births and 139 deaths were registered during the week ended Saturday, Sept. 30th. The annual rate of mortality, which had been 14.8, 17.3, and 15.6 per 1000 in the three preceding weeks, rose to 18.3 in the week under notice, against 13.5 and 14.7 per 1000 in London and Glasgow respectively.

The 139 deaths from all causes included 36 of infants under 1 year and 31 of persons aged 65 years and upwards. Seventeen deaths (of infants under 2 years) were referred to diarrhoeal diseases, 4 to enteric fever, and 1 each to scarlet fever, whooping-cough, and diphtheria. The causes of 4 deaths were uncertified, and 58, or 42 per cent., of the total deaths occurred in public institutions.

During the same period 180 births and 100 deaths were registered in the city of Belfast. The deaths corresponded to an annual rate of 13.4, or 1.2 per 1000 less than in the previous week, and included 11 of infants under 1 year and 29 of persons aged 65 years and upwards. Six deaths were referred to infantile diarrhoea, 2 to scarlet fever, and 1 to enteric fever. The causes of 4 deaths were the subject of coroners' inquests, and 1 other was uncertified, while 28 of the total deaths occurred in public institutions.

Correspondence.

"Audi alteram partem."

THE CHOICE OF ANÆSTHETIC FOR A MILITARY HOSPITAL.

To the Editor of THE LANCET.

SIR,—I am glad to reply to Colonel J. Campbell's letter in THE LANCET of Sept. 30th. First, may I explain that my letter in the issue of Sept. 16th was written somewhat hurriedly on the eve of my going on holiday? I can quite imagine that the type of patient met with in a base hospital in France is not the same as we get here. The exhausted, anæmic, and septic men Colonel Campbell speaks of are not at all numerous with us, and our men are mostly of the robust type, although their wounds are all more or less septic. I should not dream of using chloroform for such cases; I give them ether. I have found, however, that the men do better, as a rule, under chloroform than under any other anæsthetic. We have here a large number of "clean" operations, such as for hernia and varicose veins, nerve and blood-vessel operations, and we have a large throat, nose, and ear department, as well as an eye department, with many cases requiring plastic operations. With 2500 beds we have to get through our work rapidly and have no time to spare for what I may perhaps be allowed to call fancy anæsthetics.

My routine method in this hospital is to induce with C.E. (CHCl, 2, ether 3) until the stage of excitement is passed and then continue with chloroform by the Junker apparatus. Should any signs of depression appear I sprinkle some ether on the mask, but this I have rarely found necessary. Space does not permit of my going into much detail, but I hope I may at some time have an opportunity to do so.

To mention a few of my cases:—

Appendicectomy.—Five difficult cases, in all of which administration lasted over an hour, an ideal smooth anæsthesia, perfect relaxation being obtained in all. One shorter one, administration lasting 36 minutes, in which chloroform was given from the first with ideal result. Formerly I always gave ether for this operation after a preliminary hypodermic injection of morphia and atropia.

Nerve operations.—One in which administration lasted 1 hour 44 minutes. Two on brachial plexus, in one of which administration lasted 3 hours 20 minutes, a preliminary hypodermic injection of 1.100 gr. atropia being given; induction by chloroform for 3 minutes; ether by close Clover for 7 minutes, the rest of the time chloroform being given by Junker's apparatus and a good even anæsthesia maintained. The other lasted 2 hours 40 minutes.

Bone-plating, femur.—Administration lasting 1 hour 57 minutes.

Amputation of thigh.—Administration lasting 42 minutes; in this case 6 per cent. glucose solution was given per rectum every four hours for 48 hours before operation.

Removal of a piece of shell from spine; complete paraplegia.—Administration lasting 63 minutes. Position fully prone.

Whether or not my method is regarded as obsolete, I have found it advantageous to the patients, the surgeon, and myself. It is undeniably simple and economical. I am daily employing it, and intend to continue. If given carefully, in suitable cases, by an experienced anæsthetist, I do not believe that the risks of chloroform are much greater than those of any other anæsthetic. I believe it would be practically impossible to obtain the apparatus required to carry out some of the methods mentioned by Captain Wilkins, in the average military hospital dependent on the War Office for its supply. I consider the Vernon Harcourt apparatus bad in principle since the patient has to draw all his air-supply through narrow tubes.

With regard to the letter of my esteemed colleague, Dr. H. L. Noel-Cox, in THE LANCET of Sept. 23rd I have to express my regret that, in the hurry of the moment, I omitted to acknowledge his valuable suggestions for the mouth-prop and tube. I had no desire whatever to claim credit for an invention, but merely wished to direct attention to the instrument.—I am, Sir, yours faithfully,

A. DE WINTER BAKER.

Horton County of London War Hospital, Epsom, Sept. 30th, 1916.

To the Editor of THE LANCET.

SIR,—The recent correspondence on this subject reminds one of the motor aphorism: "Every automobilist has three

speeds—viz., that which he tells the police he is driving at; the one he mentions to his friends; and lastly that at which he really drives." These stages likewise exist with the anæsthetist. Thus: the one the surgeon remarks on; the one the patient comments about (on the following day); and the one the administrator believes the patient to be in. These three, like the motorist's speed, do not always coincide!

The choice of an anæsthetic in a military hospital, as well as in a civil hospital, must be judged after consideration of the patient's condition and the nature of the operation. That one man's meat is another's poison, certainly applies to anæsthetics. A good test is an induction without struggling, an unconsciousness without cyanosis, both ideal for the patient as well as more pleasant for the administrator. Some may attain this in one way, others in another. It is not the anæsthetic; it is the way it is given. With some a bit of lint and a drop-bottle of chloroform will achieve this; others prefer more accurate methods, such as the simple percentage chloroform inhaler which I described in THE LANCET of April 1st, or the warmed vapour methods advocated by Dr. F. E. Shipway, of Guy's Hospital. When rapidity of induction is an important point, as in a casualty clearing station, the ethyl chloride-ether sequence has much to commend it, especially when used as by my colleague Captain Cronyn, with an Ormsby inhaler.

The tests on which I should insist are: a quiet induction, a good colour, and an absence of post-anæsthetic sickness. The anæsthetic which gives these results, plus the relaxation the operator needs, is the ideal one. Personally I believe this to be obtainable with the simple percentage chloroform inhaler, in long cases giving ether after chloroform induction through the pot. Eleven per cent. can be obtained with the indicator fully on and a higher percentage of ether is obtainable by attaching a few layers of gauze to the air intake and dropping on ether. Oxygen can be given at the same time by slipping into the air-intake a pewter tube connected with a cylinder of oxygen. I find this method of great use for prolonged chloroform anæsthesia such as cases of laminectomy, nerve resection, abdominals, and operations of two hours or more.

I am, Sir, yours faithfully,

CHARLES T. W. HIESCH,

Temporary Captain, R.A.M.C.: Anæsthetist, Royal Herbert Hospital, Woolwich.

Kensington Palace-mansions, W., Oct. 2nd, 1916.

THE EFFECT OF FERRIVINE AND INTRAMINE ON SYPHILIS.

To the Editor of THE LANCET.

SIR,—It was partly in view of the unknown impurities, which modify the action of the organic preparations salvarsan and neosalvarsan that I attempted to avoid having to use arsenic. So long as we use compounds containing one or more of the only three metals which have a strong bactericidal action *in vitro* but not *in corpore*—namely, arsenic, antimony, and silver—we are playing with fire, because the greater the bactericidal action a metal has the more toxic it is. Ferrivine was stated to be colloidal, which it is, because of the size of its molecule, of the properties it exhibits when examined by the ultramicroscope, and of its readiness to form ferric hydroxide when injected intravenously. I have stated that the hydroxides of both aluminium and iron have a therapeutic action in syphilis, but it is necessary to protect them by an emulsoid colloid before they can be injected intravenously. Ferric hydroxide being an unstable colloid, I prepared ferrivine, which readily forms the hydroxide on reaching the blood-stream. It is owing to this property and to the result it sometimes has in causing shock that made it necessary to add a protective. Unfortunately, as I have since found, the more protected a colloid is the less therapeutic action it exerts. To get over this difficulty it will be necessary to prepare a compound with the iron more firmly attached to the benzene ring. If such a compound can be prepared I am confident that, with the joint use of intramine, our treatment of syphilis will be more successful and less dangerous than it is with salvarsan and its substitutes.

I am, Sir, yours faithfully,

London, Sept. 30th, 1916.

J. E. R. McDONAGH.

A PLEA FOR ROUTINE RADIOSCOPY IN MILITARY HOSPITALS.

To the Editor of THE LANCET.

SIR,—In the course of two years' work with the X rays in French military hospitals in this district I have been much struck by the number of cases in which results of the first importance have been obtained although the patient was submitted to X ray examination almost accidentally. Many of the hospitals here are not fitted with X ray installations and in only a comparatively small number of cases are the patients sent for examination to a hospital where an installation does exist. Inevitably, also, these cases are those in which the medical man in charge has some suspicion that there may be either a bony lesion or a foreign body present. The frequently surprising results obtained from these "fortuitous" cases make one think the radioscopy examination of all, even possibly, surgical cases ought to be as much a matter of routine as taking the names of the patient and his regiment.

I have often noticed that men have been sent back from the front with their papers recording a diagnosis made at a base hospital or an X ray examination made and perhaps a projectile removed. In many of these cases the diagnosis seems to be taken as final, or in cases where an X ray examination has been made it is assumed that all the possible information which such an examination can give has been given and acted upon. That this is not always a safe assumption the cases I cite below seem to prove, and they are only four striking examples among many I have met with. They seem to indicate that the more leisurely examinations possible outside the zone of the armies may lead in many cases to information which will result in a much shortened stay in hospital.

CASE 1.—Sergeant-Major —. A man of about 38. Ten months at the front. Frequently employed on especially dangerous and responsible work. No wound. Was crawling along a communication trench under heavy shell-fire. On reaching his destination found he could not straighten his knee without pain. Sent to base hospital and treated for some time for rheumatism. Then evacuated to interior and arrived at this hospital. Had never been X rayed. On examination by me it was found he had a piece of a needle about 1 inch long just below the left patella. It was easily localised and extracted in operation.¹

CASE 2.—Soldat G —. (Wounded Sept. 8th, 1914.) His papers stated he had been hit by a machine-gun bullet which entered his left buttock and passed out at a point just above the left popliteal space. After the wounds had healed patient complained of pain, which led to his having electrical and other treatment for sciatica and paralysis of the left foot for 4½ months. The pain having lessened, he was sent to his dépôt for convalescence; but the pain having returned, he was sent here for galvanism. On April 8th, 1915, our surgeon, Dr. Roger Cope, removed a mitrailieuse bullet from the very substance of the sciatic nerve itself. Another bullet, deeply embedded near the hip-joint, as it was causing no trouble, was left. The explanation, of course, was that he had been hit simultaneously by two bullets, and that what had been assumed to be entrance and exit wounds were in reality two entrance wounds.

CASE 3.—Soldat V —. His papers showed that he had been hit by an *éclat d'obus* in the left forearm, near the wrist. The ulna was fractured. A large piece of shell had been removed from the wound, and was in the man's possession. He was sent in to me from another hospital for a report on the condition of the fracture. This was good, but a radioscopy examination showed a rifle-bullet near the elbow. As there was only one entrance wound the bullet and the shell fragment must have entered simultaneously at the same place. As the probe revealed the *éclat d'obus* and accounted for a not very serious fracture, no X ray examination had been deemed necessary.

CASE 4.—Soldat C —. Wounded by an *éclat de grenade*, June 9th, 1915. In this case there was a large and fairly superficial wound in the left lumbar region. He had been X rayed at a base hospital and a large piece of grenade casing had been extracted. On re-examination, on reaching us, it was found that there was a group of foreign bodies in the region of the wound. They were quite small and almost transparent to the X rays. There was no fracture. Mr. F. W. Ramsay

¹ I should mention that his fellow patients were full of derision for this mishap, and said that it was not a war wound, it was a charwoman's accident. In saying above "no wound," I am quoting the man's own answer to my inquiry. He subsequently said that he supposed as he was much scratched and had many insect-bites that it was invisible, and being under shell-fire he cannot have noticed a needle-prick.

operated and removed from the wound 14 fragments of bone. Now, as there was no fracture it is plain that somewhere in its flight the projectile had encountered bone, had smashed it to atoms and driven the fragments into the patient's back. A cursory screen examination had revealed the large projectile which had been removed. Its very obviousness had veiled the other faint shadows which the unburied routine work revealed. I very much doubt if this case would even have been sent in for examination from another hospital here, at any rate not until it had suppurated for a long time.

I am, Sir, yours faithfully,

E. W. HUTTON (Mrs.),

Chef du Service Radiologique, H.C. 95, St. Malo; L'Hôpital Notre Dame des Grèves, St. Malo, I. et V., France.

Sept. 27th, 1916.

THE TREATMENT OF SEPTIC WAR WOUNDS.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Sept. 16th, p. 507, Colonel Sir Almroth Wright has the following sentence: "It would defy anybody to picture to himself the 'tissues assembling forces (chiefly cells).'" I venture to suggest that, on the contrary, the local assembling of tissue cells as a means of defence against microbic invasion is a matter which has been too much neglected by immunologists. What is a lupus nodule or a syphilitic papule but an assembling of tissue cells as a defence against microbic invasion? And does not the familiar wart result from an assembling of epithelial cells as a defensive reaction to the invasion of some as yet undiscovered microbe? I would ask Colonel Wright to read an illuminating article by Dr. R. Sabouraud in the *Annales de Dermatologie et de Syphiligraphie*, t. x., 1899, p. 729, entitled "La Défense de la Peau Contre les Microbes." There is described a "tableau de bataille" which clearly contradicts Sir Almroth Wright's seeming assertion that the cells of the tissues take no part in reactions of defence.

I am, Sir, yours faithfully,

Devonshire-place, W., Sept. 27th, 1916.

H. G. ADAMSON.

MEDICAL CERTIFICATES AND FITNESS FOR MILITARY SERVICE.

To the Editor of THE LANCET.

SIR,—The differences of opinion as regards a man's fitness for general service between the military medical officers and the civilian practitioners are greatly to be deplored and deprecated, as they tend to undermine the confidence of the public in the skill of the medical profession. Any solution which would obviate these disagreements would be an advantage. There are faults on both sides, but they do not lessen the gravity of the disagreement. The civilian practitioner practically is bound to give to a patient a certificate, but he words it in such a way that an intelligent military medical officer should be able to read between the lines. The military medical officer should avoid making any disparaging remarks on the nature of the certificate. It would, however, be far better if the War Office were to issue a form similar to the forms used for life assurances or in accordance with the examination of recruits, and these completed forms would be given to the individual to hand to the President of the Medical Board. They would be of great assistance to the military medical officers in forming a correct decision and would remove all causes for complaint. A civilian practitioner never is aggrieved at an adverse decision to his opinion by the medical officers of a life assurance.

I am, Sir, yours faithfully,

G. SHERMAN BIGG, F.R.C.S. Edin.,
Surgeon-Captain, A.M.S. (retired).

Victoria-street, S.W., Oct. 1st, 1916.

THE TREATMENT OF ANGIO-NEUROTIC OEDEMA.

To the Editor of THE LANCET.

SIR,—I should be very obliged if any of your readers can help me in treating a case of angio-neurotic oedema, or giant urticaria. I myself am the case.

The history is as follows. When about 16 years of age and a medical student the trouble began, and lasted on and

off for about a year or so and then disappeared, and I forgot all about it. Now, 20 years later, it has returned to be a burden to me. Two years ago I came out to India and was stationed in a very hot district, and the urticaria returned. Six months ago I was sent to a cooler station and it left me, but has again returned. The malady takes the form of raised patches of erythema, varying in size from a patch 1 or 2 inches square to areas of 6 or 8 inches. After riding I may get a very marked patch on the inner aspect of the knees and a less raised patch all the way down each thigh on the inner side; a frequent place is the flexor aspects of the forearm, but the worst area is when the soles of the feet become affected. In this position it is very painful, due to the tension, and walking is a misery. After a long march, say 12 miles, it may come on, but as long as one keeps going it is bearable, but if a rest is taken it is agony to get going again; if, however, I "stick it" the pain seems to wear off, only to return on again resting. Yesterday I had to ride a distance of 20 miles, and to-day my gluteal region, thighs, feet, and calves are, to say the least of it, distressing.

The "eruption" is distinctly cedematous in character, and anything tight in the way of gaiters laced tightly or sock suspenders will induce it. Lying out on the ground at night in camp will for a certainty bring out the "bumps" on the hip or back. The malady has affected the scrotum and penis; in the latter it is usually unilateral, and the first time I experienced it I thought I had a severe but painless balanitis! The swellings gradually appear and extend, and last as a rule for 48 hours; they are not very irritable, but scratching is interesting, so to speak. Pain is only marked in areas such as the palms of the hands and soles of the feet. As a medical student I woke up one night feeling stuffy and uncomfortable in the throat, and found that one side of the uvula and palate was cedematous and causing some embarrassment in breathing; it passed off by the morning. I only once have had it on the face, the upper lip; once I had melæna during an attack, pointing to the possibility of the intestinal mucous membrane being the seat of a patch.

My general health is excellent, and has always been. I am very abstemious, never drinking spirits or beer; I smoke a good deal. I am unable to trace the onset of the attacks to diet, but suspect nuts, and hence avoid them. It is interesting, however, that three days before the present attack I ate three chocolates containing walnuts.

There is no hereditary history of a disposition to the disease. I am married, with one child; eat well, sleep like a top, and work hard, and always have done. My family history is good and without medical interest.

I have got no satisfaction at all from text-books either as to pathology or treatment; and apart from advice from a skin specialist to keep a tracheotomy tube always ready, no other recommendation has influenced me. I feel quite well in every other way before and during an attack.

I shall be very grateful if any of your readers will advise me as to a cure for this "distressing complaint." As I write this my right hand is half as big again as my left; to-morrow it may be the other way round.

I am, Sir, yours faithfully,
MAJOR, R.A.M.C. (T.F.).

India, Sept. 1st, 1916.

THE CASES OF PLAGUE IN LIVERPOOL.—The outbreak of plague in Liverpool was brought to light owing to the death of a boy on Sept. 19th. The patient had been medically treated for double pneumonia, but died after two days' illness. The father and brother of this boy became ill about the same date and were removed to the workhouse, and the circumstances were reported to the medical officer of health. The two latter patients were examined and isolated in hospital, as they presented symptoms suspicious of bubonic plague. This diagnosis was confirmed later by bacteriological examination. The mother was also taken to hospital as a contact and developed the disease about Sept. 22nd. The father died on Sept. 21st. In the family affected, therefore, there were four cases and three deaths. Investigations showed that there had been a previous death in the family, as a daughter had died on Sept. 8th, the cause of death being stated to be "ptomaine poisoning." A suspicious case in another family was reported on Sept. 27th. The patient was at once isolated in hospital, and died two days later. The illness in this case has been confirmed bacteriologically as bubonic plague. Up to Oct. 2nd nothing further had occurred, the total cases numbering five, with three deaths. The origin is ascribed to rats.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Capt. G. V. Bogle, New Zealand Medical Corps, qualified M.B., Ch.B. Edin. in 1912, and after holding an appointment at the Royal Infirmary, Edinburgh, he went out to New Zealand, and was in practice at Hawkes Bay before joining the New Zealand contingent.

Lieut.-Col. A. N. Walker, R.A.M.C., was educated at Cambridge University and at the London Hospital, and qualified in 1898. He was a well-known Liverpool ophthalmologist, and had made several contributions to medical literature on the diseases of the eye.

Capt. G. P. Selby, R.A.M.C., was educated at Winchester and at Oxford University, and was a student at St. Bartholomew's Hospital, London, qualifying in 1914. He served in Bulgaria in a British Red Cross unit during the Turco-Bulgarian War, and joined the R.A.M.C. in July, 1914, going to the Front in the following December.

Died of Wounds.

Capt. J. Deighton, R.A.M.C., attached King's Own Royal Lancaster Regiment, was educated at Cambridge and at the London Hospital, and qualified in 1914.

Capt. O. G. Parry-Jones, R.A.M.C., was educated at Sherborne and at Oxford, and was a student at Guy's Hospital, London, qualifying in 1915.

Died.

Major A. H. Benson, R.A.M.C., officer commanding a Mounted Brigade Field Ambulance, was educated at Radley and at Cambridge University, and qualified in 1887. He was in practice at Cleobury Mortimer, Salop, before joining the R.A.M.C., and had been connected with the Auxiliary Forces for some years. He served throughout the South African War, and was mentioned in despatches.

Wounded.

Capt. J. A. Andrews, R.A.M.C., attached Grenadier Guards.

Capt. J. Green, R.A.M.C., attached Royal Field Artillery.

Capt. E. S. Johnson, R.A.M.C., attached Rifle Brigade.

Capt. W. B. Lawrence, R.A.M.C., attached Royal Field Artillery.

Capt. P. J. O'Reilly, R.A.M.C., attached Norfolk Regiment.

Lieut. R. F. Williams, R.A.M.C., attached Yorkshire Regiment.

Capt. J. Brown, New Zealand Medical Corps.

Capt. E. S. Jeffrey, Canadian Army Medical Corps.

Lieut. T. W. Sweetnam, R.A.M.C., attached Royal West Surrey Regiment.

Capt. J. F. Bourke, R.A.M.C., attached Cameronians.

Lieut. G. B. Ferguson, R.A.M.C.

Capt. K. G. Fraser, R.A.M.C.

Capt. H. E. P. Yorke, R.A.M.C., attached East Yorks Regt.

Capt. W. Ainslie, R.A.M.C.

Capt. T. E. B. Beatty, R.A.M.C., attached East Kent Regt.

Capt. J. S. Wallace, R.A.M.C.

Capt. W. B. Allen, R.A.M.C.

Capt. J. A. Pridham, R.A.M.C.

Capt. G. N. B. Sebastian, R.A.M.C., attached Royal Field Artillery.

Capt. P. R. Woodhouse, R.A.M.C., attached Irish Guards.

Missing.

Capt. A. T. Logan, R.A.M.C., attached Grenadier Guards.

AUXILIARY R.A.M.C. FUNDS.

The personnel of the Committee appointed to administer the Officers' Benevolent Branch of these funds has now been completed to the total of 20 by coöption and consists of: Lieutenant-Colonel H. G. Barling, Colonel Sir J. Rose Bradford, K.C.M.G., C.B., Lieutenant-Colonel W. Collier, Major A. C. Farquharson, Colonel Sir James Kingston Fowler, K.C.V.O., Lieutenant-Colonel H. P. Hawkins, Colonel Culver James, Major H. H. Littlejohn, Colonel D. J. Mackintosh, M.V.O., Major Ewen Maclean (chairman), Lieutenant-Colonel O. W. Mansell Moullin, Major D. W. Patterson, Major G. Newton Pitts, Lieutenant-Colonel W. Pasteur, Captain R. J. Stirling, Surgeon-Colonel Atwood Thorne, V.D., Colonel H. H. Tooth, C.M.G., Lieutenant-Colonel F. H. Westmacott, Lieutenant-Colonel W. Hale White, and Lieutenant-Colonel G. Sims Woodhead. The secretary is Lieutenant-Colonel F. W. H. Davie-Harris, at 124, Victoria-street, S.W.

OBITUARY OF THE WAR.

ROLAND PLAYFAIR CAMPBELL, B.A., M.D.,
C.M. MCGILL,

LIEUTENANT-COLONEL, CANADIAN ARMY MEDICAL CORPS.

The loss that has fallen upon the Canadian Army Medical Service by the death at the front of Lieutenant-Colonel R. P. Campbell is indeed heavy, so great was the respect he inspired from all who came in contact with him, so whole-hearted was the devotion of his colleagues and of his unit towards him, and so thorough, modest, and capable was he in all his duties, whether as a medical man or a soldier.

"Bly" Campbell, as all his friends termed him, was a son of the Manse, his father being a well-known Canadian Presbyterian, the late Rev. Professor John Campbell. Born in Montreal in July, 1876, he had a distinguished career as a student, graduating B.A. in 1897 and M.D., C.M. in 1901. Following graduation, he was for two years resident in the Montreal General Hospital, then for more than a year he continued his studies in Germany, becoming *interne* at the Pathological Institute at Göttingen, and working also at the Surgical Clinic at Breslau, where, under Neisser, he became specially interested in genito-urinary surgery, which he made his life work.

Returning to Montreal, he was appointed medical superintendent of his old hospital, holding this position for three years, until 1907. Later he was made assistant surgeon and given charge of the genito-urinary clinic of that hospital. From being demonstrator in pathology he became lecturer in genito-urinary surgery at McGill University. Keenly interested in research, he wrote several papers upon renal pathology and surgery. When Ehrlich, prior to placing salvarsan at the disposition of the profession in general, sent over a supply of this drug in advance to the leading syphilologists in North America, Campbell first received it in Canada and tested and reported upon it. He was, in fact, an admirable example of the research surgeon and had a profound influence in encouraging other young surgeons in Montreal, who seemed naturally to gather around him, to undertake research. He was thus largely influential in the establishment in the University of a Department of Experimental Medicine, open to practitioners in the city.

He had joined the Canadian Army Medical Corps in 1905, and in 1910 was placed in command of No. 5 Canadian Field Ambulance at Montreal. An enthusiastic soldier, he offered his services at the very beginning of the war, and from No. 1 Field Ambulance was attached as Major to No. 1 Canadian General Hospital, C.E.F. With this unit he was in charge of the Canadian sick through the winter of 1914-15 at Salisbury Plain, there accomplishing excellent work under very difficult conditions. In the meantime No. 6 Canadian Field Ambulance was being assembled at Montreal by Major Burnett. In March, 1915, he was called back to assume command of this unit as Lieutenant-Colonel.

It has been urged that so capable a specialist should have been employed by the Canadian Army Medical Service in direct connexion with his specialty; but Campbell was a soldier before everything, and preferred the command of his unit at the front to any administrative or special position that could be offered to him. Nor is it any exaggeration to say that his unit rapidly made a reputation for itself by its remarkable capacity and *esprit de corps*; even its "horse lines" were acknowledged to be the best along the whole front. In Sir Douglas Haig's despatch of June 15th he was mentioned for gallant and distinguished conduct in the field. During the three days' operations beginning on Sept. 15th he was placed in charge of the clearing of the ground in the front area; and, to quote the Assistant Director of Medical Services, Colonel Fotheringham, "Campbell, with his usual sense of duty and disregard of personal safety, was well up with the advance on the morning of Saturday, the 16th, . . . trying to estimate the situation for himself rather than depending on information from regimental medical officers and bearers." It was here, just after dawn, when conducting a group of bearers towards safety, that a shell exploded and a fragment fractured his right arm while another penetrated his chest. Borne back to a dug-out, he there refused to be treated, directing that others whose wounds were not hopeless should be looked after. And so he died within half an hour from internal hæmorrhage. He was a very perfect gentleman, and his manner of death was the epitome of his life.

FREDERICK WILLIAM THEODORE CLEMENS,
M.B., B.S. LOND.,
SURGEON, ROYAL NAVY.

Temporary Surgeon F. W. T. Clemens, who was among those killed in action on board H.M.S. *Defence* during the naval battle off the Skager Rak on May 31st, was 27 years

of age and only son of the Rev. T. L. Clemens, of Tobago, West Indies. His early education was obtained at the Moravian School at Fulneck, near Leeds. In 1905 he joined the Moravian Mission College in Bristol, hoping to become a medical missionary, but, to his great disappointment, was rejected on the ground of health. He continued to study at Bristol University, gaining the Clarke Surgical Scholarship and qualifying M.B., B.S. Lond. in 1913. He then took a position as house



surgeon at Taunton Hospital, which he resigned at the outbreak of war on obtaining a commission in the Royal Navy.

One of his Bristol teachers writes of Surgeon Clemens that he was a brilliant student, always a steady worker, and at the same time popular with his fellows. His ability included the power of original observation. He made many friends at Bristol, and in a quiet, unostentatious way exercised a constant influence for good on those around him.

Surgeon Clemens was an accomplished musician and keen on out-door sport. At one time he was in the running for the captaincy of his University boat.

HUGH KENNEDY BIRLEY, M.R.C.S., L.R.C.P. LOND.,
CAPTAIN, MANCHESTER REGIMENT.

Captain H. K. Birley, attached to the Manchester Regiment, who was killed in action on July 23rd in his forty-seventh year, was the eldest son of Frederick Hornby Birley, of Bedford, and late of Manchester. Educated at the Owens College, Manchester, he qualified as M.R.C.P. Lond., M.R.C.S. Eng. in 1895, and went into practice at Irlams-o'-th'-Height, Manchester, where his cheery and

unselfish disposition much endeared him to his patients. Prior to setting up in practice he was a keen member for ten years of the Manchester volunteers, and at the outbreak of war at once offered his services and obtained a captaincy in one of the battalions raised by the city of Manchester. He devoted to his new profession the same keenness and sense of duty which had characterised his work amongst his patients. After a winter and spring of life in the trenches, where his professional knowledge was many times of service to his comrades, he lost his life in the advance on the Somme.

Captain Birley was much beloved by his fellow officers and men. "Many a boy of ours," writes one of his company, "has left the trench badly wounded to go down to the dressing station with a smile on his face, and telling everyone he passed that he felt all right as Captain Birley had attended to him and dressed his wounds." Before the outbreak of war Captain Birley devoted much energy to Red Cross work



in Pendleton, where he held the position of assistant county director.

Captain Birley married in 1900 the third daughter of the late Canon Stowell, of Chorley, Lancashire.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

- Capt. C. B. Wilson, Canadian Infantry, only son of the late Dr. C. B. Wilson, of Florence, Italy.
 Capt. J. D. Eccles, M.C., eldest son of Major McA. Eccles, R.A.M.C., of Harley-street, London.
 Second Lieut. J. L. Goddard, Norfolk Regiment, third son of Major C. E. Goddard, R.A.M.C., of Wembley, Middlesex.
 Lieut. C. J. P. T. S. Baly, The Buffs, elder son of the late Dr. P. P. Baly, of Westward Ho!, Devonshire.
 Lieut.-Col. A. N. Walker, R.A.M.C., second son of the late Mr. G. E. Walker, F.R.C.S., of Liverpool.
 Capt. H. Mackay-Coghill, Highland Light Infantry, second son of the late Dr. J. D. Mackay-Coghill, of Shrewsbury.
 Second Lieut. D. W. Armitage, Royal Sussex Regiment, youngest son of Dr. J. A. Armitage, of Netherwood, Hastings.
 Capt. O. G. Parry-Jones, R.A.M.C., elder son of Dr. M. Parry-Jones, of Derby.
 Lieut. C. E. McDonnell, Middlesex Regiment, elder son of Fleet-Surgeon J. R. McDonnell, of Gloucester-road, London, N.W.
 Capt. G. P. Selby, R.A.M.C., eldest son of Dr. P. G. Selby, of Teynham, Kent.
 Major G. E. Kidd, Royal Field Artillery, eldest son of Dr. P. Kidd, of Brook-street, London, W.
 Capt. F. W. C. Hinings, East Yorkshire Regiment, younger son of Dr. J. W. Hinings, of Leeds.

THE WORK OF THE ARMY DOCTOR.

In the *Times* of Oct. 4th there is an excellent description from the pen of Lord Northcliffe of the life of the medical man under fire. The fine work done by the medical service of our Army has been recognised by all whose opinion is worth having, but few perhaps outside the Service itself, and those to whom it actually ministers, have realised how elaborate the organisation has necessarily been to give such good results, or how strenuous are the toil and moil which maintain the construction in its high state of efficiency. Lastly, the sacrifice that has been made by many doctors of their lucrative practices in order that they may give their services to the Army has not hitherto received its due public acknowledgment. All this is set right in Lord Northcliffe's vivid and instructive communication. Describing the scene in an underground trench hospital in the firing line, which is diagrammatically represented in the article, Lord Northcliffe says: "In all my experiences abroad I have never seen a more touching sight than this little underground gathering of some 70 men, devoted doctors and assistants, waiting amidst the incessant shelling until the overcrowded maze could be evacuated. Let those who take their ease on a Sunday afternoon, or any other afternoon, realise that this same scene never ceases. Let those who consider that they are amply doing their 'bit' by keeping things going at home be grateful that their 'bit' is not as these young men's. We cannot all of us share the danger, but we can every one of us admit the harsh inequalities of our respective war work."

THE NEED FOR MICROSCOPISTS.

The Young Men's Christian Association are organising a series of microscopical exhibitions in the military and naval camps for the interest of the men in their leisure hours. An organising committee, consisting of Fellows and members of the Royal Microscopical Society, Quekett Microscopical Club, and the Photomicrographic Society, has been formed, and already many fixtures have been made for exhibitions to be held in the Young Men's Christian Association huts in various centres throughout the metropolitan area and the home counties. The exhibitions generally take place in the late afternoons or evenings, and competent microscopists who can spare the time to give service with their microscopes are invited to communicate with the Honorary Secretary, Microscopical Department, Young Men's Christian Association, Tottenham Court-road, W.

Medical News.

UNIVERSITY OF GLASGOW.—The following results of examinations are announced:—

DEGREES OF M.B. AND CH.B.

Medical Jurisprudence and Public Health (Fourth Professional Examination—New Medical Ordinance).—William Adams, Robert Aitken, John Ashtorth, Alexander Basil Austin (distinction), John Salisbury Craig, William Dempster, Andrew Dick, Kenneth Henry Dyke, Samuel Norman Dykes, James Paton Fleming, Thomas Forrest, Walter Watson Forsyth, Lewis Livingstone Fotheringham, Robert John Leslie Fraser, Jacob Joels, William Hogarth Kerr, M.A.; William Mackintosh Kerr, George Lean, B.Sc.; James Liddell, Frederick Richard Lubbovis, Hugh Ernest McColl, Donald William Morison Mackenzie, Donald James Mackinnon, John Marshall, Jules Steinmetz Martin, M.A. (distinction), David Stephen Mitchell, James Moffat, James Walker Patterson, George Pearson, Samuel Murdoch Riddick, John Llewelyn Rowlands, Frank Watt Sandeman, James Hamilton Shearer, Clarence Lorraine Somerville, Douglas Taylor, James Joseph Treanor, William Halliday Wallace, John Pendleton White, Robert Wiggins, George Young, Jean Mary Frew, Grace Lelsk Hunter, Elizabeth Clark McHaffie, M.A., May Elizabeth MacIver, Robina Stuart Mackinnon, Jessie Brown MacLachlan, and Lillias MacLay.

Medical Jurisprudence and Public Health (Third Professional Examination—Old Medical Ordinance).—John Bradford, Peter Fife Auchinachie Grant, Robert Hugh McKillop, William Duff Miller, and Pat Adam Stewart.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—The opening meeting of this society will be held to-day (Friday, Oct. 6th), at 8.30 p.m., in the Society's Rooms, West London Hospital, when the presidential address on Some Aspects of the Nose and Throat in Relation to General Medicine will be delivered by Dr. Arthur Saunders.

Baron Heyking, the Imperial Russian Consul-General in London, will take the chair at a public lecture to be delivered by Professor W. M. Bayliss, F.R.S., on "The Physiological Work of Ivan Petrovitch Pavlov," at University College, London, to-day, Friday, Oct. 6th, at 5.30 p.m. The lecture will be open to the public without fee or ticket.

GUY'S HOSPITAL MEDICAL SCHOOL.—The following Entrance Scholarships have been awarded:—Senior Science Scholarships for University Students: William Gover, Balliol College (£75); and Robert Blake Poole Lansdown, B.A., Pembroke College, Cambridge (£35). Junior Science Scholarships: Alan McKenzie, Preliminary Science Class, Guy's Hospital (£120). Scholarships in Arts: Antoine Yves Cantin (private study) (£100); John Alexander Currie, Diocesan College, Rondebosch, Cape Colony (£50).

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index). When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

ASHTON-UNDER-LYNE DISTRICT INFIRMARY.—Junior House Surgeon. BARROW-IN-FURNESS, NORTH LONSDALE HOSPITAL.—Assistant House Surgeon.

BECLES, SUFFOLK, 1st CYCLIST BRIGADE FIELD AMBULANCE.—Three Medical Officers. Also Regimental Medical Officer for 2/1st West Somerset Yeomanry.

BEDFORD COUNTY HOSPITAL.—Assistant House Surgeon, unmarried. Salary £150 per annum, with board, &c.

BOLTON INFIRMARY AND DISPENSARY.—Female Second House Surgeon. Salary £200 per annum, with board, &c. Also Female Third House Surgeon. Salary £180 per annum, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Physician. Salary at rate of £120 per annum, with board, &c.

CHISWICK URBAN DISTRICT COUNCIL.—Dental Surgeon.

DENBIGHSHIRE COUNTY COUNCIL.—Female Assistant Medical Officer of Health. Salary £350 per annum.

DORSET COUNTY COUNCIL EDUCATION COMMITTEE.—School Dentist. Salary £250 per annum.

SEXBY EDUCATION COMMITTEE.—Female School Medical Inspector. Salary at rate of £300 per annum.

HUDDESFIELD COUNTY BOROUGH EDUCATION AUTHORITY.—Assistant School Medical Officer. Salary £300 per annum.

HULL, CITY AND COUNTY OF, KINGSTON-UPON-HULL INFECTIOUS DISEASES HOSPITALS.—Resident Medical Officer. Salary £300 per annum, with board, &c.

ISLEWORTH UNION INFIRMARY.—Temporary Assistant. Salary £375 per annum with rations, &c.

ITALIAN HOSPITAL.—House Surgeon for six months. Salary £80 per annum, with board, &c.

LEEDS PUBLIC DISPENSARY.—Female Resident Medical Officer. Salary £200 per annum, with board, &c.

LIVERPOOL, DAVID LEWIS NORTHERN HOSPITAL.—House Surgeon for six months. Salary at rate of £150 per annum, with board, &c.

LONDON THROAT HOSPITAL, 204, Great Portland-street, W.—House Surgeon. Salary £50 per annum.

MACCLESFIELD, CHESHIRE COUNTY ASYLUM, Parkside.—Temporary Assistant Medical Officer. Salary £300 per annum, with board, &c.

MIDDLESEX HOSPITAL, W.—Vacancy on Honorary Staff.

MONMOUTHSHIRE COUNTY COUNCIL.—Female Assistant Medical Officer. Salary £350 per annum.
 NETLEY, WELSH HOSPITAL.—Medical Officers.
 NOTTINGHAM GENERAL HOSPITAL.—Two House Physicians and One Assistant House Surgeon for six months. Salary at rate of £250 per annum each, with board, &c.
 PADDINGTON GREEN CHILDREN'S HOSPITAL, W.—House Physician—House Surgeon for six months. Salary at rate of £30 per annum.
 PRESTON, LANCAS. COUNTY ASYLUM, Whittingham.—Local Tenens, unmarried. Salary £77s. per week, with board, &c.
 QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone.—Physician in Charge of Ante-Natal Department.
 ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Two House Physicians and two House Surgeons. Salary £50 per annum, with board &c. Also Senior Obstetric Assistant. Salary £33 per annum, with board, &c. Also Junior Obstetric Assistant. Salary £23 per annum, with board, &c. Also Assistant Anaesthetist. Salary £23 per annum.
 SHEFFIELD, ROYAL INFIRMARY.—Two House Surgeons. Salary £100 per annum, with board, &c.
 SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—House Physician. Salary £150 per annum, with board, &c.
 STAFFORDSHIRE EDUCATION COMMITTEE.—Two Permanent and Four Temporary Female Assistant School Medical Inspectors. Salary £300 per annum.
 SUNDERLAND ROYAL INFIRMARY, CHILDREN'S HOSPITAL.—Resident Medical Officer for six months. Salary £150 per annum, with board, &c.
 WANDSWORTH UNION INFIRMARY, Onseley-road, Balham, S.W.—Temporary Assistant Medical Officer. Salary at rate of 7 guineas a week, with board, &c.
 WARRINGTON INFIRMARY AND DISPENSARY.—Senior and Junior House Surgeons. Salary £200 and £150 per annum respectively, with board, &c.
 WEST BROMWICH AND DISTRICT HOSPITAL.—Assistant House Surgeon. Salary £120 per annum, with board, &c.

Births, Marriages, and Deaths.

BIRTHS.

FAWCUS.—On Sept. 25th, at Hartfield-road, Eastbourne, the wife of Lieutenant-Colonel H. B. Fawcus, C.M.G., R.A.M.C., of a daughter.
 GUSH.—On Sept. 16th, at Westville-road, Thames Ditton, the wife of Dr. Howard Gush, W.A.M.S., temporary Lieutenant, R.A.M.C., of a son.
 HEALD.—On Sept. 27th, at The Cottage, Weybridge, the wife of Captain C. B. Heald, R.A.M.C., of a daughter.
 NEWBERRY.—On Sept. 28th, at India-street, Edinburgh, to the wife of the late Lieutenant Richard Fenton Theodore Newberry, R.A.M.C., a son.
 SYKES.—On Sept. 28th, at Ashhurst, Formby, Lancs, the wife of Dr. A. Barry Sykes, of a son.

MARRIAGES.

ASHTON—MORHAM.—At 17, Mansion House-road, Edinburgh, on Sept. 23rd, by the Rev. James Lumsden, B.D., Minister of Tolbooth parish, Captain Basil Cedric Ashton, R.A.M.C., to Agnes May, youngest daughter of George Morham, Edinburgh.
 GORDON—PROCTER.—On Sept. 28th, at Cockerham Church, Lancashire, William Bonnalie Gordon, Captain, R.A.M.C., son of W. B. Gordon, of Bradford and Ilkley, to Joan, daughter of H. T. Procter, of New Fields, Bay Horse, Lancashire.
 RUSHBROOKE—BALDWIN.—On Sept. 29th, at Stoke Newington Presbyterian Church, Montague Penhall Rushbrooke, R.A.M.C., to Vera Louise Baldwin, only daughter of Arthur Baldwin, Solicitor, and Mrs. Baldwin, of "Fretville," Lordship Park, N., and "Inglewood," Herne Bay, Kent.
 SOWDEN—HEYWOOD.—On Sept. 29th, at Christ Church, Albany-street, N.W., George Sowden, M.D., P.P.H. Camb., Barrister-at-Law, to Doris Burnett, youngest daughter of the late Henry Cleland Heywood.
 STIDSTON—CUMBERLAND.—On Sept. 27th, at the Parish Church, Luton, by the Rev. J. St. Clare Hill, Lieutenant-Colonel C. A. Stidston, M.D., R.A.M.C., T.F., of Wolverhampton, and Olive, youngest daughter of Mr. Hugh Cumberland, J.P., of The Lynchet, Luton, and the late Mrs. Jeanie Cumberland.
 WILLIAMS—THOMAS.—On Sept. 28th, at the Welsh Presbyterian Church, Charing Cross-road, London, Major O. Herbert Williams, R.A.M.C., to Ethel Kendrick Thomas, daughter of the late William Thomas and Mrs. Thomas, Alburgh-drive, Liverpool.

DEATHS.

BENSON.—On active service, on Sept. 24th, Major Alfred Hugh Benson, R.A.M.C., Officer Commanding Mounted Brigade Field Ambulance.
 BOGLE.—Killed while attending the wounded, on Sept. 17th, Gilbert Vere Bogle, M.B. Edin., Captain, N.Z.M.C., of Hawkes Bay, New Zealand, aged 32 years.
 DEIGHTON.—Died of wounds, on Sept. 19th, Captain John Deighton, M.B., R.A.M.C., Medical Officer to King's Own Royal Lancaster Regiment.
 GILBERT-SMITH.—On Sept. 27th, at Tenby, Edwin Gilbert-Smith, F.R.C.S.E., of Calthorpe-road, Edgbaston, and Newhall-street, Birmingham.
 KEMBLE.—Died at sea, buried at Penang, on July 31st, Arthur Charles Kemble, L.R.C.P., L.R.C.S. Ed., aged 62 years.
 SELBY.—Killed on Sept. 28th, while attending the wounded, Gerard Prideaux Selby, B.A., M.B., B.Ch. Oxon., M.R.C.S., L.H.C.P., Captain, R.A.M.C., aged 25 years.
 WALKER.—Killed in action, on Sept. 24th, Arthur Nimmo Walker, Lieutenant-Colonel, R.A.M.C.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

ANNUAL REFERENCE BOOKS.

IN spite of shortage of paper, difficulty in obtaining labour, and other inconveniences engendered by the war, annual reference books appear fairly regularly, while the accuracy of their contents speaks well for the pains that have been bestowed upon their compilation. That most useful work, *The Charities Register and Digest* (London: Longmans, Green, and Co. Pp. cccxxxiv. + 686. Price 5s. net), is now in its twenty-fifth edition, and besides containing a classified register of charities in or available for the metropolis, gives a large amount of information respecting legal and voluntary means for the prevention and relief of distress and the improvement of the condition of the poor, while there is a useful introduction on how to help cases of distress, written by the compiler, Mr. C. S. Loch, late secretary of the council of the Charity Organisation Society. For conciseness, convenience of reference, and cheapness, the oldest guide to the charities of London, *Low's Handbook* (London: Sampson Low, Marston, and Co., Ltd. Pp. 254. Price 1s. net), easily takes a first place. All the charities are arranged alphabetically, a paragraph of a few lines giving exactly the kind of information which a prospective donor, or a person seeking information for a suitable case, is likely to require. The book is now in its eighty-first year of publication. An illustrated preface tells the story of King's College Hospital, past and present. *The Girls' School Year-Book* (Public Schools) (London: The Year Book Press. Pp. 654. Price 5s. net) is issued as the official year-book of reference of the Association of Head Mistresses, but it also provides a record of all matters of interest to parents, schoolmistresses, and girls in connexion with secondary education. Nearly half of the book deals with the future career of girls on leaving school, and particulars are given of various professions and openings for girls. *British Rainfall, 1915*, compiled by Dr. H. R. Mill (London: Edward Stanford, Limited. Pages 283. Price 10s.), we also include in this list, because it is essentially a book of reference. It contains an epitome of the year's meteorological work, it is well illustrated with maps and diagrams, and there are articles upon various branches of rainfall work. The records have been made by about 5,500 observers.

HEALTH OF GAMBIA.

ACCORDING to a report on the Blue-book of Gambia for the year 1915, prepared by Mr. W. Telfer Campbell, Colonial Secretary, the total population of the Colony and Protectorate is a little over 146,000, including 123 Europeans, of whom 44 are officials. No death or case of invaliding occurred amongst the European residents during the year. The death-rate in the Colony showed a decrease, being 35.4 per mille, as against 39.8 in 1914. The Colony was free from any epidemic, but in parts of the Protectorate small-pox was prevalent. In the Bathurst Hospital 483 in-patients and 8304 out-patients were treated, as compared with 566 and 9799 respectively in 1914. There is a smaller hospital at MacCarthy Island under a native dispenser; it contains one ward for Europeans and three for native patients. A building situated about two miles from Bathurst is used for contagious diseases. In 1915 there were 660 vaccinations performed in Bathurst and 2057 in the Protectorate. The rainfall for the year was 47.64 inches. The highest shade temperature recorded was 100° and the lowest 52° F.

SENILE DIARRHOEA.

To the Editor of THE LANCET.

SIR,—With such causes of diarrhoea as cancer of the stomach and intestines, tuberculosis, ulcerative colitis out of the reckoning, catarrh of the large bowel with painless diarrhoea may occur in many circulatory disturbances, and "M.D. (R.N.)," whose letter appears in your issue of Sept. 30th, might get a clue by (if not already done) taking the blood pressure, as such catarrh accompanied by very persistent diarrhoea is not infrequently found in late cases of chronic Bright's, especially chronic interstitial. By no means is it necessary that either albumin or casts be present.

I remember some years ago in my private practice a case in point. After consultation I discussed the case with Sir Lauder Brunton, and in the absence of any history of Bright's disease we decided to tell the relatives the difficulties in making a positive diagnosis. We suggested as the most likely cause of the diarrhoea (which had trickled away without cessation for over two weeks continually) malignant disease, if not chronic Bright's disease. After death the relatives (alarmed at the idea of cancer) expressed a wish for a post-mortem. The whole length of the bowel showed no

pathological condition, but the kidneys were both a mere flattened-out, pancake-like mass, nearly all fibrous tissue, although frequent examinations during life had failed to discover albumin or casts.

From somewhat similar cases I have had I have found treatment on the lines indicated in cases of chronic Bright's and high blood pressure, when present, the most useful. Hot baths, electric-light baths, ionisation in Schnee's baths, lithium or sodium hippurates, and to arrest the diarrhoea strictly liquid food, with, say, milk once or twice or more a day, given cold, with one or more tablespoonfuls of raw arrow-root stirred up with it and taken uncoked. Medicines are not much use, except, perhaps, alkalies with liq. bismuth. et ammon. citratis.—I am, Sir, yours faithfully,

Bournemouth, Oct. 2nd, 1916.

G. H. RUTTER.

THE EVENING STOOL.

To the Editor of THE LANCET.

SIR,—Some years ago I ventured to call the attention of the profession to the mischief wrought by a certain tradition of the elders, but as I suppose I did not write as one having authority, apparently my hint has been ignored, or even despised, for I constantly find that if I mention the point thoughtful men are favourably impressed with the idea, but only once have I found anyone who seemed to have heard of it before.

It is the rule that doctors advise their patients to form the habit of evacuating immediately after breakfast. By all means let them do this so long as they regard the practice merely as an "extra luxury" and as an inexorable rule that they must stool between dinner and bed-time. A moment's thought and the reasons for this "leap to the eye." Firstly, the morning rule is constantly broken, and must be broken by busy people who have trains to catch. They say to themselves, "Must wait till I get to the office"; but business crowds it out, and so they go through the day poisoning themselves (I use the unnecessarily strong word for brevity), until chronic constipation and all its hideous consequences may be established. Secondly, during sleep, and while vitality is at its lowest, the body is more vulnerable to attack and less resistant to fecal poisons, which during eight hours it steadily absorbs. For these reasons I would urge the profession to forbid their patients to go to bed with a full rectum.

I am, Sir, yours faithfully, and write from

Sept. 29th, 1916.

PERSONAL EXPERIENCE.

PEMMICAN.

To the Editor of THE LANCET.

SIR,—The etymology of the word "pemmican" given in THE LANCET of Sept. 9th is not very full. I enclose an abstract from Father A. Lacombe's Cree-French Dictionary which has reached me from Winnipeg. I am informed that the "e" in the word should be "i."

I am, Sir, yours faithfully,

Oct. 2nd, 1916.

W. E. B.

ENCLOSURE.

Pemmican—"pimty" (noun), grease, fat; "pimtiw," greasy; "pimtkew," the act of making grease; "pimtkewin," the act of making pemmican, grease, &c.; "pimtkkan," a bag filled with a mixture of grease and pounded meat, is pemmican. From Skeat's "Etymological Dictionary of the English Language." "Pemmican," a preparation of dried meat (N. American Indian); a Cree word; see Cree Dictionary by Lacombe.—Cree "pimtkkan," pemmican, a bag filled with a mixture of fat and meat, from "pimty"—grease.

NEOCAINE-SURRENINE.

Messrs. The Anglo-French Drug Co., Ltd., of Gamage-buildings, Holborn, London, E.C., referring to our analytical notice last week of neocaine-surrenine, point out that the actual time taken to induce anaesthesia, employing this substance, is exactly that taken by cocaine of equal strength.

METEOROLOGICAL READINGS

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET OFFICE, Oct. 4th, 18.

| Date. | Barometer reduced to Sea Level and 32° F. | Direction of Wind. | Rate-fall. | Solar Rad. in Vacuum. | Max. temp. in Shade. | Min. Temp. | Wet Bulb. | Dry Bulb. | Remarks. |
|----------|---|--------------------|------------|-----------------------|----------------------|------------|-----------|-----------|----------|
| Sept. 28 | 29.780 | E. | ... | 90 | 63 | 55 | 56 | 57 | Foggy |
| " 29 | 29.640 | N.E. | 0.04 | 71 | 61 | 56 | 57 | 58 | Raining |
| " 30 | 29.952 | N.E. | 0.05 | 100 | 69 | 52 | 51 | 54 | Cloudy |
| Oct. 1 | 30.140 | N.E. | ... | 91 | 61 | 49 | 49 | 51 | Cloudy |
| " 2 | 30.330 | S. | 0.03 | 69 | 57 | 43 | 52 | 53 | Raining |
| " 3 | 30.040 | S.E. | 0.39 | 63 | 54 | 53 | 55 | 56 | Overcast |
| " 4 | 29.830 | S. | 0.26 | 93 | 67 | 56 | 60 | 61 | Raining |

The following journals, magazines, &c., have been received:—Royal Prince Alfred Hospital Gazette, Journal of Surgery, Abolitionist, Prescriber, British Dental Journal, Practitioner, British Journal of Dental Science, Veterinary News.

Medical Diary for the ensuing Week.

SOCIETIES.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY.—8 P.M., General Meeting. 8.30 P.M., Presidential Address:—Lieutenant Colonel D'Arcy Power: John Ward and his Diary.

CHILD STUDY SOCIETY LONDON, Royal Sanitary Institute, 90, Buckingham Palace-road, S.W.

THURSDAY.—6 P.M., Mr. C. Brereton: The French Child at School.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simon: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simon: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simon: Gynecological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics.—10.30 A.M., Surgical Out-patients (Mr. B. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. E. Whipple); Gynecological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics.—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whitting).

WEDNESDAY.—Clinics.—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. E. Whipple); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynecological Operations (Dr. A. E. Giles). Clinics.—Medical Out-patients (Dr. A. J. Whitting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics.—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. B. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

ST JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

THURSDAY.—6 P.M., Chesterfield Lecture:—Dr. M. Dockrell: The Skin in Health and Disease.

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It is most important that communications relating to the Editorial business of THE LANCET should be addressed exclusively "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

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Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

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|---------------------|--------|
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An Address

JOHN WARD AND HIS DIARY.

Delivered at the Medical Society of London on the Occasion of His Induction as President, Oct. 9th, 1916,

By D'ARCY POWER, F.R.C.S. ENG.,

SURGEON AND LECTURER IN SURGERY, ST. BARTHOLOMEW'S HOSPITAL;
LIEUTENANT-COLONEL, R.A.M.C. (T.F.).

PART I.

GENTLEMEN,—I cannot begin this address without expressing my sense of the great honour you have conferred upon me by placing me in this chair. My unworthiness to fill it is borne in upon me with especial force when I look round and see on the walls of this room the names of my 96 predecessors, all eminent in their profession, many illustrious also for their civic and moral virtues. The tradition of the society is a great one, and will prove hard to maintain in the third year of a war which has dislocated every relationship in life. I can count, however, upon the loyal support of my secretaries and the other officers of the society, and with their help I hope to hand it on unbroken to my successor.

It is usual for the President to give an address at the beginning of his year of office upon a subject which is of interest to the society. To some the selection of a topic must have been difficult. I am fortunate in having one ready to hand, because three or four years ago the Council gave me permission to transcribe the manuscript volumes known to us as "John Ward's Diaries." They have long been amongst the most treasured possessions in our library, and, as the event proved, they have never been adequately examined. It is not known how they came into our possession, but in all probability they formed part of the collection of books belonging to Dr. James Sims, who was President from 1786-1809. This long tenure of office caused the schism which led to the foundation of the Royal Medical and Chirurgical Society, which now flourishes as the Royal Society of Medicine.

The note-books are 16 in number, roughly uniform in size, measuring $5\frac{1}{2} \times 3\frac{1}{2}$ inches, and have been whole-bound in calf. One volume has "J. W." stamped in gold, back and front—the precursor of a book-plate. The volumes vary in thickness. The writing is on both sides of the page, sometimes only a word or two, sometimes with blank pages, but for the most part so much crowded that a reading-glass is necessary to decipher it. The volumes follow a sequence of years from 1647-48 until 1673, but the order of date is not followed strictly year by year, though it looks as if a new volume was not usually begun before the previous one was filled. The books are in no sense diaries or records of events from day to day like the diaries of John Evelyn or Samuel Pepys. They are rather of the nature of "table books," or "common-place" books, in which Ward recorded from time to time notes of what he had read or heard, or ideas and suggestions which might prove serviceable. Although there is nothing of great historical interest, yet the general view gained from reading them affords an insight into the character of Ward which is valuable as giving the opinions and occupations of a scholar and a gentleman during the Commonwealth and Restoration periods.

DR. SEVERN'S BOOK ON THE DIARIES.

An investigation of the minutes of this society shows that on Oct. 5th, 1838, "a letter was read from Dr. Severn announcing that the MSS. of Dr. John Ward, of Stratford, in the society's library, contained curious matter relating to Shakespeare, &c. It was resolved that a committee should be appointed to investigate the subject and report thereupon to the Council at their earliest convenience. The following gentlemen were nominated on the committee: Messrs. Clifton, Dendy, Headland, Kingdon, and Roberts." On Nov. 23rd, 1838, the committee appointed to examine Dr. John Ward's MSS. reported that "although they had found much that was amusing, interesting, and instructive among them, yet they were of too desultory a nature: the historical, medical, and clinical notices too much mingled together for the Society to offer them in their present state No. 4859.

to the public, but that, Dr. Severn having made extracts from them, the Society might give him permission to publish them, he acknowledging that it was done with the Society's sanction." The committee also recommended that the other manuscripts in the society's possession be catalogued. It was further resolved that permission be given to Dr. Severn to publish extracts from the MSS. of the Rev. John Ward.

Dr. Severn lost no time in availing himself of the permission, and early in the year 1839 there appeared an octavo volume of 315 pages with the title-page, "Diary of the Rev. John Ward, A.M., Vicar of Stratford-upon-Avon, extending from 1648 to 1679. From the Original MSS. preserved in the Library of the Medical Society of London. Arranged by Charles Severn, M.D., Member of the Royal College of Physicians in London, Registrar to the Medical Society of London. Published by permission of the Council. London: Henry Colburn, Publisher, Great Marlborough-street. 1839." This volume consists of a dedication to the President and other officers of the Medical Society; of a preface; of some account of the life of the Rev. J. Ward, A.M., and of a series of short articles upon Shakespeare, which together occupy the first 87 pages. The remaining 228 pages deal with the diary itself. It is clear that Dr. Severn had only made a superficial examination, but we owe him a debt of gratitude, not only for calling attention to the volumes, but also for the assiduity with which he gathered such biographical details of Ward as were then available.

Of Severn himself I have only been able to collect the following facts. He was admitted a Licentiate of the Society of Apothecaries on May 16th, 1816, and was found qualified to practise in any part of England and Wales, including the City of London and ten miles round. He lived for a time in Jewin-street, E.C., and from there published "First Lines in the Practice of Midwifery, to which are added remarks on the forensic evidence requisite in cases of feticide and infanticide. 8vo. Lond., S. Highley, 1839." He was admitted an extra licentiate of the Royal College of Physicians of London on Oct. 1st, 1832, and he had then obtained the degree of M.D., but from what university is now unknown. It was not from Oxford, Cambridge, or Glasgow. In 1839 he edited "The Lectures on the Principles and Practice of Midwifery by James Blundell," 12mo, J. Masters. This little book he dates from the society's house in Bolt-court, Fleet-street. He died in the summer of 1840, apparently leaving a wife and daughter.

The society's minute records on Sept. 4th, 1840, that "Mr. Dendy reported to the committee the decease of Dr. Charles Severn, the late Registrar." A vote of condolence was passed, and in accordance with the appreciation of his services, and, moreover, regarding the advanced age and debility of Mrs. Severn, the Council requests the family to remain in the society's house in order that they may take charge of its property and fulfil the directions of its librarians and secretaries until arrangements may be made regarding the office. Miss Severn performed the duties of Registrar until Sept. 5th, 1850, when Mr. Ley was appointed sub-librarian. On Nov. 9th, 1850, Mr. Dendy called attention to the claims of Miss Severn, and proposed that "on her leaving the premises in Bolt Court she be paid a year's salary to March next." This was seconded by Dr. Greenhalgh and agreed to. Miss Severn received £21 in March, 1851, the year in which the society migrated from Bolt-court to George-street, Hanover-square.

ASCERTAINABLE FACTS ABOUT JOHN WARD.

Before I give any extracts from the manuscript volumes which lie before you, it may be interesting to gather such facts about the writer as are still available. He was born at Spratton in Northamptonshire in the year 1629, the elder of the two sons of John Ward, M.A. of Pembroke College, Oxford, by Dorothy, a daughter of Richard Parfeter. John Ward the father was a gentleman of property,¹ who became a lieutenant in Colonel Appleyard's regiment of foot at the outbreak of the Civil War, was taken prisoner by the Parliamentary forces at Naseby in 1645, and probably died soon afterwards, for John Ward the younger makes no mention of his father, though his mother was living some

¹ His father, Daniel Ward (d. 1627), bought the estate and manor of Houghton Parva from Lord Zouche at the beginning of the reign of King Charles I., and he also held lands at Stoke Albany and Wilbarston, which he had purchased from Lord Danvers.

years later. The younger son, Thomas, became rector of Stow-on-the-Wold.

John Ward, the writer of the note-books, went to Oxford in the middle of "the broken times," as they were called by Anthony Wood, when the University and College lists were badly kept. It is not surprising, therefore, that his name does not appear in the registers. He states, however, that "I was presented Mr. of Arts about the year 1652 in Easter term. Anthony Ratcliffe and Philip Gerard and Mr. Temple with us."

Anthony Ratcliffe, of Magdalene College, Cambridge, matriculated 1st October, 1645, was incorporated 16th March, 1648-49, student of Christ Church by the visitors; B.A. 23rd May, 1649; M.A. 6th May, 1652; canon 11th February, 1680-81; chaplain to Henry Earl of Arlington; vicar of Leigh, Kent, 1661; died June, 1703.

Philip Gerard, son of William of London, gent., Christ Church, matriculated 29th January, 1646-47, aged 13, from Westminster School; B.A. 8th July, 1649; M.A. 6th May, 1652.

"Mr. Temple" was John, of Pembroke Hall, Cambridge. Admitted 30th January, 1645-46; student of Christ Church, 1648, by the visitors; B.A. 8th July, 1649; M.A. 6th May, 1652; vicar of Haughton 1660, and of Portslade, Sussex, 1669.

Ward also speaks of "our table at Christ Church"—i.e., the Master of Arts table in Hall where the resident Masters dined together. It is fair to assume, therefore, that Ward matriculated at Christ Church at the end of 1646 or the beginning of 1647, graduated B.A. in July, 1649, and took his degree of M.A. on May 6th, 1652. It is an interesting sign of the times that two of his friends had been incorporated from Cambridge, because such migrations at this time were usually due to political causes. It appears from various notes scattered through the books that he remained in residence at Oxford until the Restoration, when the whole social atmosphere of the University underwent such a change as to make it uncongenial to those who had lived in it through the period of the Commonwealth. During this time his interests lay in history and in science—chiefly chemistry, botany, medicine—and in general literature. He never took the degree of Bachelor of Physic, but it is probable that he held the status of student of medicine, a status then recognised in the University and only abolished within my own recollection. At any rate, he treated many sick persons by medicine, though it does not appear that he performed any operations.

He left Oxford in 1660, perhaps as a direct result of the Restoration, for, although his father suffered in the Royalist cause, his personal friends must have been of the modified Republican type, who were in residence during the Commonwealth. Casting about for a profession, it is clear that he was sorely tried to decide between the Church and physic. He took orders in 1660, and his note-books for this year contain numerous divinity notes and sermons. In 1661 he was in London attending lectures on anatomy at the Barber Surgeons' Hall in Monkwell-street, and debating in his own mind whether he should obtain a bishop's licence to practise medicine or an M.D. from a foreign university. He also interviewed "Mr. Giles, of Lincoln's Inn, who deals in spiritual livings." He thought first of Brentford, then of Kingston-on-Thames, where his friend, Dr. Bate, the Puritan doctor, is buried, and finally got himself instituted in 1662 to the vicarage of Stratford-on-Avon in succession to Alexander Beane, who had held the living since 1648. Beane was ejected at the Restoration, but his congregation built him a church in the town, and the Congregational Church in Rother-street is still known as the "Church of the Ejectionment." The presentation to the living was in the hands of the King, but before 1681, when Josiah Simcox, A.M., became vicar, it had passed into the hands of Charles, Earl of Dorset and Middlesex.

Ward held the living until his death on Sept. 12th, 1681. He was buried in the chancel near the north wall, and the following inscription was placed on a flat stone: "Hic jacet Joh. Ward, A.M., Sprattoniæ, Northampt., natus, hujus Ecclesiæ Vicarius per annos XIX. denatus fuit XII. die Septembris, Anno Domini MDCLXXXI., ætatis sue LII." The stone disappeared when the church was repaved in 1840, but the inscription was copied and the place of burial was recorded by the Rev. James Davenport, who was vicar from 1787-1842. I have little doubt that he was ruptured and that he died of phthisis. Of his domestic relations nothing is known, but as his will makes no mention of wife or child, it is probable that he never married.

THE REVIVAL OF SCIENCE IN WARD'S TIME.

A valuable feature of Ward's note-books is the insight which they give into the mental pursuits of the Oxford graduates during one of the most stimulating periods of the University's long career, an insight which is the more valuable because little is known of it except through the crabbed Life of Antony Wood. The note-books give an unvarnished and wholly personal account of the things which were uppermost in the minds of those who "sate at our table in Christ Church" by one who entered heart and soul not only into the new-born scientific spirit of the time but into the literary and social life. The books he read, the stories he heard, and the practice he saw, are all faithfully recorded. He shows himself throughout as a well-read gentleman, as insatiably curious as "the elephant's child," quite clear and decided in his opinions, which are founded on observed facts and not on theories, and yet curiously credulous to our eyes, for as yet science was in its infancy, there was no chemistry, no pathology, and medicine was still mediæval in character.

The stern realities of the Civil War, the military occupation of the city, the dispossession of the Royalist Fellows, and the introduction of Independents had finally displaced the authority of the schoolmen and put aside theological controversy. The undergraduates and the younger Bachelors and Masters were more interested in facts gained by observation and experiment than in the disputations and rhetorical displays which had pleased their fathers. Oxford was at the beginning of one of the great periods of awakened interest in natural science such as had occurred in the twelfth century during the lifetime of Roger Bacon and during the last quarter of the nineteenth century within our own memory. With the authors of this revival Ward was contemporary, and with many of them he was on terms of friendship.

The seventeenth-century revival of science led to the foundation in 1645 of the Philosophical College, which held its meetings at the lodgings of Dr. Jonathan Goddard in Wood-street, Cheapside. This was followed by the "Invisible College," or "learned Junto," which met at Wadham College when Dr. Wilkins was Warden and Dr. Goddard had succeeded William Harvey as Warden of Merton. The Invisible College contained the germ of the Royal Society, of whose foundation Ward says:—

I have heard this guesst abt as ye ground of founding ye Royal Societie. The King well knew yt Harrington who wrote Oceana and such strange fellows as have had their discourses and meetings and have talked of a Commonwealth; whereupon he instituted another societie, whereof his Royal Self vouchsafed to bee one, in opposition to itt, not thinking fitt to put down ye other by open contradiction.

The leaders of the scientific revival were nearly all Oxford graduates, though some of the most illustrious, like Wallis and Scarburgh, were only sons by adoption, for they had been incorporated from Cambridge. Most of the founders of the Royal Society were in residence with John Ward, who was born, as you will remember, in 1629, entered Christ Church in 1646 or 1647, and took his M.A. degree in 1652. Dr. Bathurst, of Trinity College, with whom Harvey spent many hours observing the changes in incubated hens' eggs, was nine years older than Ward. Dr. Willis, born in 1621, was eight years older. He entered Christ Church in 1636-37 and practiced in a house just opposite Merton. Robert Boyle, the greatest dilettante of the set, was born in 1626, and was living in Oxford at the house of Mr. Crosse, the apothecary in the High-street adjoining University College, in 1654. Richard Lower, born in 1631, entered Christ Church with a scholarship from Westminster in 1649. Christopher Wren, born in 1632, matriculated from Wadham in 1649-50 after he had acted for a time as prosecutor to Dr. Charles Scarburgh. Dr. Wallis, Glisson's first pupil and the friend of Samuel Pepys, came into residence at Exeter College as Savilian professor of mathematics in 1649.

This list of names, incomplete as it is, shows how inspiring must have been the atmosphere to a youth like John Ward, who had a strong inclination towards medicine and science, though he eventually entered the Church. While he was at Oxford Wilkins was considering the problem of perpetual motion; Harvey and Bathurst the development of the chick; Wallis the circulation of the blood; Willis and Lower anatomy in relation to the brain and heart; Barlow

of the Bodleian, oriental languages; Bobart, botany, and especially the movements of the sensitive plant. Ward notes of him: "Bobart ye physick gardiner has had a feavour in 1660 and after itt his hands and his feet peeled, his very flesh came off." All were interested in chemistry, which was as yet little more than alchemy, whilst physiology had hardly made any headway, for Mayow (1643-78), the gifted Cornishman whose early death was so great a loss, had not yet come to Oxford; Boyle was advancing physics; Goddard was doing something to make medicine scientific, but pathology was non-existent and physic was little more than folk-medicine.

EXTRACTS FROM THE NOTE-BOOKS.

The first volume of the commonplace books begins, "John Ward his booke, 1648 An. Dom. Aug. 26," about a year and a half after he had entered the University, and when he was 19 years of age. It contains an abstract of Sir Philip Sidney's "Arcadia," interspersed with extracts from Sir Thomas Browne's "Religio Medici." Perhaps some indication of his politics at this time is given in the statement that "Parliaments are good physic but ill meat." He next read "Tite Andronico," a novel full of sentiment if it may be judged by the sentences he selects that "shee was grown sick of a surfeit of health," and "poured soe full and fast compliments upon him that stifled therewith he could make no answer in return but stood in a swoond of amazement." And in another place: "The teares trickled down his reverend cheeks as if they had run a race which of them should be foremost," whilst "he went out as a Lamp for lack of oil, no warning groan was sighed forth to take his last farewell, but hee smiled himself into a Corps."

Having finished this novel he started on Sir Walter Raleigh's "History of the World," but the extracts are not numerous, and he very soon gave it up for "The Unfortunate Politick," a story of Herod and Mariamne, which was of the same sickly sentimental type as the other romances. He quotes as a part of it, "Seeing him now at the brink of the grave he flings himself in, expelling by brutish violence that soul which he was ready to surrender up to nature."

LECTURES IN MEDICINE: THE PULSE; PURGATIVES.

The book being finished, he returns to history, more especially the History of the Persian Wars, and a few pages later on there are notes of a lecture in Latin on medicine, the subjects being pleurisy, the urine, and menstruation. Other lecture notes deal with the pulse and with the uses and actions of purgatives. Harvey had not yet come to Oxford, and the Regius Professor of Physic does not appear to have accepted his views. He stated boldly that:—

A pulsibus diagnoscentur statūs vitales. In pulsibus, prout in corde, duo sunt motūs contrarii scilicet systole et diastole. [The vital conditions are diagnosed from the pulses. There are two contrary movements in the pulses as in the heart, namely, systole and diastole.]

The teaching in regard to purgatives took the following form in Ward's notes:—

The causes of purging medicines: (1) Extreme bitter as in Aloes and Colloquinta [Colocynth]; (2) Loathsome and horrible taste as Agarick and black hellebore; (3) by secret malignity many times not appearing in the taste as Scammony and Antimony; and if anything purge which hath not one of these 2 former virtues in it, it is to be suspected for poison.

The lecturer then proceeded to say that quantity was an element in the purging capacity, for

if we drink a great quantity of new milk it purgeth; that a mordication or vellitation of the orifice of the veins especially of the Mesentery veins: that almost all purges cause a kind of twitching and if it be in a high degree it is little better than poison which works by corrosion. The seventh cause of purging is attraction, for purging medicines have in them a direct force of attraction as drawing plaisters have in surgery. So Betony bruised and put into the nose draweth phlegm and water from the head. Those medicines that draw quick draw the fluid humors, those that draw slow work upon the viscous humours. Flatuosity is another cause of purging for wind stirred moveth to expell. Most purges lose their virtue by decoction upon the fire and for that cause they are chiefly infusion, juice or powder.

I have given the headings of this lecture as they stand, because it is evidence of the state of medicine in the University before the revival of science at Oxford.

WARD BECOMES M.A.: NATURE OF HIS STUDIES.

The second volume begins on May 27th, 1652, and opens with the exercise for the M.A. degree. The thesis was "An æstate an hieme plura sunt oblectamenta. Affirmatur quod æstate" [Whether the delights of summer or winter are the more numerous. It is decided in favour of summer]. The exercise would have taken about ten minutes to read. It ends sententiously with "Dixi," I have spoken. It is interesting as an example of the Austin disputation which preceded admission to the degree of M.A. Such a disputation or exercise was performed by every Bachelor of Arts once a year unless he had obtained a dispensation. It was held on any Saturday in term time between the hours of 1 and 3 o'clock in the choir of St. Mary's (the University Church) and was presided over by the masters of the school who received either a drachma (4d.?) or a pair of gloves as a fee. Three days' notice was given by affixing the subject of the disputation and the names of the disputants to the doors of St. Mary's Church.

The note-books give no further indication that Ward continued to read romances. They are filled with notes on more serious subjects as soon as he had taken his M.A. degree. After several pages devoted to divinity, to civil and to ecclesiastical law, he returns to natural science as it represented itself to him in alchemical speculations on antimony and mercury. There was still considerable belief in astrology. The philosopher's stone and aurum potabile were still the subjects of serious experimental work and led to the foundation of modern chemistry. The extracts on alchemy are "Ex Angelo Salâ." His botany he learnt from Bobart, the keeper of the Physic Garden in Oxford, by the delightful practice of "simpling," which meant pleasant summer days spent in walking to Shotover and Forest Hill, or afternoons in the Physic Garden itself. Anatomy he studied in "Briggs, his Anatomia"; physic in Ramondæus translated by Tomlinson; surgery in Paræus rendered into English by Johnson. Incidentally he mentions a case of hysterectomy. "Dr. Witherburne in London took out ye womb of a woman." Measles was raging at the time, for he records that the physicians say "the disease is autogenous like the plague; that the fever is less when the rash is coming out than afterwards, and that the backache before the appearance of the rash in measles is due to an excess of blood in the vena cava."

BOTANY.

Of Bobart, or Jacob as he always calls him, Ward has many reminiscences, chiefly during the year 1661. There were two Jacob Bobarts, father and son, both Horti Botanici Custodes. Ward must have known both intimately, but it is Jacob Bobart the elder [1599-1680] who taught him botany. He was born at Brunswick and was appointed superintendent of the Oxford Physic Garden on its foundation by the Earl of Danby in 1632. In 1648 he published a catalogue of 1600 plants under his care, and this was revised in 1658 in conjunction with his son. The revision, no doubt, was itself being revised when Ward knew him, and it explains his references to Gerard and Tomlinson. Ward's references enlarge our knowledge of the man who must have been one of those characters for which each generation at Oxford has been celebrated. We are told that "on rejoicing days he used to have his beard tagged with silver" and that a goat followed him instead of a dog. One of the earliest entries is:—

"Five sorts of fritillaries Jacob saies they have in ye Garden. Wee saw ym in flour March ye 23 1661 in ye Garden." "The 28 March 1661 wee went to Shotover to find Lunaria by Jacob's directions but found none." "I was upon New College wall on ye 17 April 1661 to find Ruta muraria but could find none; but much diastrium nigrum was there." "A great piece of horse chestnut. Remember yt I get a cup made of itt." "Jacob found a chestnut tree wild near Newburie and many hee hath seen growing in Sion College garden wch brought chestnuts to perfection." "Rochet seed scarce to be got. Jacob saies hee had itt not, nor scarce ever saw itt." "Jacob hath a very proper orchis wch resembles a Bee wch I saw May ye 4 1661." "That Sedum in Bobart's house hath grown up these 8 years only by taking of ye cloth now and then and anointing itt with oil once a quarter and soe putting itt on againe." "May ye 9 An^o Domini 1661 att ye Physic Garden Jacob told mee there is a gentleman in Worcestershire who hath made very considerable progres in altering flowers artificially, hee knows not his name." "Rhubarb now may be bought for about 16s."

or 18s. ye pound." "Bobart had a Bunch of Grapes once ripe on ye 5 August wch hee presented to ye Swedish Ambassador, then att Oxford. Hee brags much of itt still, they usually not soe till ye latter end of August or ye beginning of September." "Jacob says hee thinks Parkinson hath 500 plants more than Gerard; only Gerard's paper is better and his cuttis better, they being dulled ere they came into his hands." "Jacob Bobart spake with Dr. Modesay and says of him, ye whole world yields not ye like man: hee never heard any man talk att yt gallant rate in his life: hee showed ym all his designs in ye new Garden. There are to bee walks in itt of thirtie feet wide as hee saies."

ANATOMY AND PHYSIOLOGY.

There is an interesting note written in the year 1652 which is valuable, as it affords a test of Ward's accuracy in reporting what he heard. It is interesting because I imagine it formed a part of the talk at the M.A. table in Christ Church Hall, "our table," as Ward calls it, on some afternoon when Glisson had paid a flying visit to Oxford. You will remember that Glisson was one of the original members of the Royal Society, that he was Regius Professor of Physic at Cambridge and a graduate of the University of Oxford; that he first wrote on Rickets and afterwards on the Liver, the capsule of which is still called by his name. A disciple of Harvey, he was "omnium anatomicorum exactissimus." Of him Ward wrote:—

Asserit Glissonius fuisse Jolivium quendam sibi amicum qui affirmavit dari 4tum genus vasorum distinctorum ab arteriis venis et nervis ut in toto corpore communicationem ejus munus esse aquosam humorem continuo in toto corpore distribuere.

Glisson says that Jolivius, one of his friends, stated that there was a fourth kind of vessel distinct from the arteries, veins, and nerves, so connected throughout the whole body that their function was to distribute a watery humour through the whole body.

In 1654, two years after Ward had recorded the story, Glisson published his book "*Anatomia Hepatis*," in which the following passage occurs. He is writing of the Lymphatics of the Liver:—

Incidi primum in eorum notitiam indicio D. Jolivii idque anno 1652 sub initium Junii: quo tempore ille Doctoratus gradus adapturus, me Cantabrigie in eum finem convenerat. Asseruit nempe dari vasorum 4tum genus, a venis, arteriis nervisque plane diversam idemque ad omnes aut plurimas saltem corporis partes distribui et humorem aquosam in se complecti.

My attention was first drawn to them by Mr. Jolivius about the end of June in the year 1652, at which time he was incorporated to the degree of Doctor when I was at Cambridge, and he came to me for that purpose. He stated, forsooth, that there was a fourth kind of vessel clearly distinct from the veins, arteries, and nerves, and that these vessels were distributed to all, or at any rate to most of the parts of the body, and contained a watery humour.

This observation seems to have borne good fruit, for Ward made some original observations and bought himself a microscope. In 1658 he records that:—

Dr. Willis and Dick Lower opened a Dogg and they first let him blood in the jugulars to discover whether arterial and venal blood did differ in colour and constitution. Mr. Francis told me that he and Dick Lower found much chyle extravasated.

Dick Lower was Richard Lower, whose name is still familiar in "the tubercle of Lower." He was one of the most gifted of the younger generation at Oxford to which Ward himself belonged. Born in 1631 he entered Christ Church in 1649 and took his degree two years later than Ward. He studied medicine under Willis—the circle of Willis—and assisted his master in the dissections of the brain and nerves which have rendered his name immortal. Lower was especially interested in the movement and colour of the blood and of the chyle. Later in life he lost a good deal of practice owing to his Whig tendencies, but as he left £1000 to St. Bartholomew's Hospital he must have done well.

Original Scientific Investigations.

Lower exercised a singular fascination upon Ward and it is clear that he assisted in some at least of his investigations in a truly scientific spirit. Here are some illustrations taken at random.

"Dick Lower is answering ye fellow that writes against Willis." "Remember to buy Dr. Willis 'De Cerebro' for one book and ye fellow's that wrote against Dr. Willis for

another." [This no doubt was Edmund O'Meara's work against Dr. Willis' work on fevers.] "Remember in all my dissections to aim at ye discoverie of a passage betwixt ye stomach and bladder." "I look upon ye blood as all other bodies to consist of three parts, ye thickest part which is first strained away in ye spleen, by ye arteries, ye thicker next that is strained off in ye liver, and ye thinnest of all after that in ye bodie or ye kidneys. These certainly are ye use of these 3 parts, though Highmore makes ye spleen to be a kind of a focus [furnace] to ye stomach to impart heat to it, and ye very consistence or hardness and porosities of whose part does argue as much."

There are several other references to the spleen and its uses, so that Ward had this organ under consideration for a long time. Thus, at one time he was asking himself—

Whether when there is a redundance of ferment in ye stomach and spleen this ferment may not passe along with ye aliment and in several parts, especially ye joints, may not be laid aside again and so cause ye gout.

And again—

Whether ye spleen borrows its ferment from the stomach or the stomach from it: Qy. whether a too much ferment in ye stomach is not ye true cause of ye cardialgia together with wind and some other things.

Such theories were probably inspired by Dr. Willis, but the practical influence of Lower can be seen in—

Things to be inquired into in dissecting Mr. Toone's dogg: at first whether his spleen is any whit grown again since it was taken out; 2ndly whether its dulishness does not proceed from ye ill crasis of his blood not being duly fermented and heightened by ye fermentation of ye spleen.

In another instance he notes that—

A dog's spleen taken out by Mr. Day, afterwards ye same spleen and ye dog was stole by Mr. Hartford and brought up to London and there dissected.

Other evidence of experimental work in a scientific spirit is seen in the statements that—

"The recurrent nerves in a dog's neck being cut ye dog afterwards could not bark." "Mr. Lower cut a dogges wind-pipe and let him run about. Hee had a week so hee could not smell, but would eat anything as I am told." "When one would discover ye ductus chyloferus of Pecquet presse ye Mesenterie somewhat hard and a thinne pellucid liquor will come out at ye top." "The nerves have their original rather from ye cerebellum or medulla oblongata cerebri than from any other part." "Inquire whether there is any such thing as a woman having a suture down her forehead as people commonly report. I searched 34 skulls or thereabouts and of these all, I found but 4 wch had a suture downe ye forehead to ye very nose: another wch seemed to have a squamiferous suture upon ye vertex and which I admired much att. I suppose nature does vary in such things and I wish I could discover something of her operations, especially whether epileptick persons have any sutures."

An equally good piece of original work, putting theory to the test of experiment, also due to Lower's influence—for he afterwards published a work on the subject—is the following:—

"View ye blood of all animals as to its thickness or thinness: yt of Turkies seems to me to be very thick." "Turkey's blood again a 2nd time observed and found to be thick immediately after its being out, wch well might bee in regard of its fulness of spirits wch soon flies away and so leaves ye masse very thick, or whether ye blood naturally is thicker yn that of other animals. Remember to kill a turkey and another fowl together and observe wch blood soonest coagulates."

MEDICINE AND PHYSICIANS.

The extracts relating to medicine and physicians are numerous, and show that practice had not advanced, and was not being investigated in the same way as anatomy and physiology. Symptoms, of course, were alone treated, and often by a nostrum.

"Dr. Wagstaff hath a water made of Roman vitriol and plantain water. He calls it aq. coerulea." "Dr. Wagstaff uses Mastick pills very much and amongst them oil of aniseed for the stone." "Mrs. Woolmer having a great weakness one time when she lay in, Dr. Wagstaffe applied cantharides to blister the inside of her foot and so draw, and drew three days untill letting out ye blister. At last she had a sore in ye place and a Lameness which she could never recover afterwards. She hath since had a numbness or palsie on one side of her head and bodie, but it hath passed away presently without any considerable matter of damage." "Inquire of Mrs. Woolmer whether ye numbness

she complains of is on ye side where ye blisters were used and again advise her to keep open her issue in the other leg and stop it up in that which hath ye sore running in it." A good many years later "Mrs. Woolmer had a tympanie. Att last it inclined to breaking and rose to a head about her navel and one day she runne a pinne into itt and itt streamed out extremely. Her advice with Mr. Hall, who wished her to lie on her back and let it out by degrees, after they got a tapp. A quarter of a year, with much stench and filth, after yt closed up and well." "Dr. Wagstaffe calls Laudanum extractum hypnoticum and extractum cordiale."

Ward died a bachelor, but he seems from the following extract to have learnt something of the wiles of women:—

Dr. Wagstaffe's daughters have a cosmeticke wch would make ye skinne peel off a little and after they looke very fair: only they kept in every time they used it about 2 or 3 dayes: and once in 6 months they used it.

As an illustration of the methods of contemporary practice he states:—

Dr. Willis imparts his receipts chiefly to 2 Apothecaries in Oxford so farre as I can perceive, Mr. Hazlewood and Mr. Crosse. Hee hath a syrup of sulphur wch hee makes much use of. It is his owne composition and no Apothecarie hath itt or knows itt but ye two forementioned. Itt may be taken and is so usually with a Liguorish stick. It is a compound not above 4*l.* an ounce, but it is most used in Colds and distempers of the Lungs.

Two ounces and a half of quicksilver given by Dr. Conyers to a patient yt was troubled with ye black passion. Itt is very good for yt distemper. Dr. Willis uses to give more: ye more you give ye less is ye danger. Itt does by its own weight passe quickly. Doe but mix itt with a plaister and heat itt a little and presently itt flies away, but boyling hurts itt not at all.

Dr. Conyers, born 1622, was educated at Merchant Taylors' School, was a Fellow of St. John's College, and took the degree of M.D. at Oxford in 1653. He was one of the few physicians who remained in London during the Great Plague, says Munk, and fell a sacrifice to it. Of Dr. Conyers, Ward also says: "Hee uses nothing else almost but his emetick powders," and that "he knows some families yt for many years, they say some hundreds, have not had ye pocks: and see it is not in ye blood of ye mother."

References to Sydenham, Willis, and Ent.

There is a short reference to Sydenham in the passage—

There was a great phlogosis in ye Duke of Cambridge his bowels. Dr. Sydenham kept ye Duke of Cambridge alive 3 weeks and the Dutchess thought hee would really have cured him. Hee did itt by some cooling water or other wch hath got him some credit. Hee was also with Sir Richard Bishop for his gout but did little except pultisse him with milk and crumb of bread. He advised Mr. Bishop to fast one day in a week for his rheumatismus so as yt humour would spend ittself.

Of Dr. Willis he says:—

My Lady Windsor is dead: her brain was good as Dr. Willis said, but her liver was rotten and corrupt much. Dr. Willis lays much store uppon ye brain nowadays.

The relationship of Willis to Lower is well shown in the fact that—

"Dr. Lower found out ye famous well near King's Sutton though hee was willing itt should goe under Dr. Willis his name." "Dr. Willis hath got a new way of opening ye Brains, as to cut them on all parts from what holds them and so to turn them upside down."

Of Willis, too, he tells the following story:—

Stephen Toon's rupture was laid open, as ye phrase is, and caused a peristaltic motion of ye guts. At last eased by a plaister and a grain of laudanum wch Dr. Willis said hee was too weak to take, the Dr. left him with these words: "Stephen, God comfort thee."

Stephen Toone did not die of his rupture. He was the apothecary with whom Ward lodged in Oxford. He was the son of Thurstan Toone of Collingborough, Northants, and was "Privilegiatus" 14th September, 1666, aged 30. His will was proved at Oxford 1st October, 1681. The teaching of Willis and Lower is again exemplified in the passage:—

Some Drs. especially in Oxford now are of opinion yt hystericall fitts are caused by ye indisposition of ye Brain. Most in Oxford, as Mr. Francis said, are of yt opinion and that men have ye same thing which some women have, and that Mr. Eliot had a patient that hadde itt and was cured by anti-hystericall things though hee was a man. That there is no passage for fumes into ye Brain by way of valves.

Sir George Ent, the friend of Harvey, to whom we owe the publication of the "De Generatione," is mentioned more than once.

"I heard that Dr. Ent going to Warwick Castle, my Lord Brook having a man very sick of ye griping of ye gutts, My Lord asked ye Dr. what was good for itt. He answered white wine plentifully drank if itt was not too sharp would doe itt, hee would lay his life of itt." "Dr. Ent said to Mrs. Lucy one time when she was sick yt hee had intended to have let her blood, but afterwards perceiving shee had ye jaundice hee said hee would not for a hundred pound yt hee had done itt."

Dr. Bate and Scurvy-grass.

There are many references to Dr. Bate, whom Ward always calls Bates, of New College. He practised in and around Oxford, especially "among precise and puritanical people, he being then taken to be one of their number." He moved to London, was physician to the Charterhouse, and attended Cromwell in his last illness. At the Restoration he became physician to Charles II., and dying in 1669 was buried at Kingston-on-Thames. Ward says:—

I have heard that Dr. Bates writt few bills wherein hee did not prescribe scurvy grass, hence some have styld him in my hearing, as relating itt for others, ye Scurvigras Dr., imagining, I suppose, there might be a tang of itt in most diseases.

Anthony Wood (Life, i., 273) says that scurvie grass drink began to be frequently drunk in the mornings as a physic drink in March, 1659. Ward says, "Put a quart of scurvy grass all fresh to 3 gallons of ale, if strong put in more."

There is an account of Bate in *Longman's Magazine* for August, 1894, pp. 364-75. "Dr. Bates told Dr. Barke that he had used ragwort with scabby people in ye hospital for 40 years with good success." He might therefore have said, as did Dr. Ballard to Lady Peniston, "Madam, I could advise you to a chymical medicine wch should cost you 10 shillings, but I am a friend of what grows under a hedge." "Mr. Hodges of Gloucester was sick of a kind of pthysic and hee consulted Dr. Bates, who prescribed him first a kind of Almond milk, then a wash of oil of Almonds and after ye chewing of tobacco to make him vomit and this cured him cleverly. After ye eating of oil and hony much gravel came away from Mr. Hodges as appeared by his urine."

Dr. Dickenson and the Use of Antimony.

He records the following case, which was under the care of Dr. Dickenson, Linacre lecturer at Oxford and of Eton and Merton Colleges.

Mr. Gwinne of our house vomited up long pieces of blood wch had heads like fishes. They carried them to the Apothecaries and cut them but knew not what to make of them.

A few pages later comes the end of the case—

I saw Mr. Gwinne of our house dissected but could perceive nothing in him that might cause his death, his spleen was somewhat flaccid, so was his heart and one of his kidneys, but his lungs had some kind of scyrrhus in them and in these scyrrhuses a sabulous kind of matter, but that could not kill him. They pretended hee had a contusion of the liver in regard ye concavity of it was a little stained or possibly itt was nothing else but a settling of ye blood when death came. There was a membrane coming from his side to his lungs on each side wch some ignorant people would have interpreted a growing of ye lungs to ye side, but Mr. Boghill said he had seen itt severall times in sound men yt hee had opened. His heart was large, about as large as ye heart of an ox but not perisht at all.

Edmund Gwynne, "serviens," matriculated from Christ Church on July 25th, 1655. The post-mortem examination shows that he had suffered from a tuberculous pleurisy with a dilated right heart, and the long pieces of blood may have been formed in a dilated bronchus. "Mr. Gwinne of our house" was under the care of Dr. Dickenson, the physician who tried to prove that the Greeks borrowed the story of the Pythian Apollo and all that rendered the oracle of Delphi famous from Scripture and especially from the Book of Joshua. Dr. Sheldon thought so highly of his work that he recommended its author to devote himself to divinity and take orders. Dickenson preferred, however, to study chemistry, a subject in which he soon became *facile princeps*. After practising in the High-street, Oxford, he moved to London and became physician in ordinary to Charles II. and afterwards to James II. Troubled by old age and stone in the bladder, he died in 1707, and is buried in St. Martin's-in-the-Fields.

Ward records in another passage that—

"Antimonie:—Mr. Boghill made a balsam of itt wch hee gave to one whose lunges were distempered with excellent success. Hee spake with a great chymist who said if one could take away ye vomiting part of itt and make itt a medicine purely purging downward itt would be a great thing; now Crosse said Dr. Dickenson gave a Lady a pill wch worked 20 times without making her sick and hee told mee confidently yt there was nothing but Antimonie in itt. Hee highly commends Dr. Dickenson for his strong pains taken in prosecuting of itt, and says that certainly hee hath admirable remedies." "Mr. Boghill hath his elaboratories about Chelsey."

Boyle, it will be remembered, lodged with Crosse the apothecary in the High-street, Oxford. Of Turner Ward tells "a merrie storie," "Dr. Turner being to bee examined by ye College for his admission thereto ye young Dr yt examined him askt him how many chapters there were in such a book of Galen? Hee made answer yt he had read Galen before he was divided into chapters." This Dr. Turner was probably John, a Doctor of Medicine of Leyden, who was admitted a Licentiate of the Royal College of Physicians on June 4th, 1630.

"Mr. Topham of Christ Church if hee sat at disputations with his hat off hee used to pisse blood." This was, I suppose, a case of paroxysmal hæmoglobinuria, the attack being precipitated by a chill. Mr. Topham was Richard Topham, B.A., incorporated from Trinity Hall, Cambridge, on Dec. 6th, 1652. He took the degree of M.A. from Christ Church on Dec. 11th, 1652.

SURGERY.

Ward kept himself abreast of the surgery of his day, for he says: "Remember to bring Woodal's Chirurgerie, he was a rare fellow in his time doubtless." This was John Woodall, surgeon to the East India Company and author of the "Viticum or Pathway to the Surgeon's Chest" as well as "The Surgeons' Mate"—the two text-books of naval surgery for many years. "Remember to purchase as soon as possible Pareus his chirurgerie and Mr. Woodall and in the meantime to borrow Woodal of some of my parish." *Paré*, translated by Johnson, was published as a second edition in 1649. Ward also supplied himself with surgical instruments, as is seen in the note: "Remember to get a speculum oris and other instruments fit for chirurgerie when I goe to London and a great case to hold them." He did not aspire to a great armamentarium, for—

"I saw one day all Gill's instruments and hee told mee ye names of ym all and their use and what ye whole case cost him: hee wanted a small spoon and some other things in ye case: yt and his Lancets and his syringe and his salvatorie were all ye necessarie tools of a chirurgion." "Gill said yt Mr. Day hath amputated 5 armes, 3 legges and somewhat else since hee came to him and but 1 of all these died and hee was a person of 60 years at least." "There are two of ye Molines in London. Ye one Edward ye eldest is excellent at stone-cutting and curing of fistula in ano or Lachrymale; ye other Gill told mee is ye better chirurgion. Hee told mee very many pretty stories of his exquisiteness in dissecting bodies wch hee saw admirably performed, taking out ye muscles and letting ym only hang by ye tendons by wch they were inserted. Mr. Moline hath a great many excellent cutts and pictures of ye liver and other inward parts."

Some Surgical Cases.

He gives a graphic account of the surgical treatment of the time:—

A man coming out of a bed by chance jabbing his bare breech down on ye side of ye bed a needle ran up his breech just by his anus. Hee sent for a surgeon of Abbingdon to pull it out and hee catching hold of itt with his forceps but not being able to hold itt but itt slipped and afterwards attempting itt hee thrust itt in further within ye cuticula. After wch Mr. Smith, an Oxford Chirurgical, was sent for; but ye fellow had made an incision and cut ye hæmorrhoidal veins wch bled abundantly att wch ye fellow, being discouraged, threw down his instruments and ranne away leaving him bleeding. They got a woman in ye town to dress him. Smith could see no signe but went and made a great incision 2 inches deep in ye Membrana adiposa and thrust in his finger and turned itt about and felt it; then getting an instrument under hee drew itt out cleverly and gave itt him. Ye fellow when he sawe itt, tooke him in his arms and kisst him and made exceeding much of itt. Hee made not his incision betuixt ye needle and ye anus as did ye other fellow but on ye outside and so no danger of ye sphincter.

Abbingdon is a good seven miles from Oxford, so that, by the time the double journey had been accomplished, to get Surgeon Smith to the patient some hours must have elapsed. Mr. Smith, the Oxford surgeon, also appears in the following passage:—

A way to stop a flux of blood. Take long needles and take up ye flesh first on one side ye vessel, yn beyond on ye other side and soe drawe ye flesh over itt and itt stopps. But itt seems an odd kind of way, tried by Smith ye Oxford Chirurgical in one, but hee died.

A Case of Tumour of the Breast.

Here is the treatment of tumour of the breast:—

* A cancer in Mrs. Townsend's Breast of Alverstton taken off by 2 surgeons the one's name was Clark of Bridgnorth, another's was Leach of Sturbridge. First they cutt ye skinne cross and laid itt back; yn they workt their hands in ytt one above and ye other below and so till their hands mett and so brought it out. They had their needles and waxt threads ready but never used them, and also their cauterising irons, but they used them not. Shee lost not above ʒvi of blood in all. Dr. Needham coming too late staid ye next day to see it opened. Hee said itt was a Meliceris and not a perfect cancer, but it would have been one quickly. There came out a flow of a great quantity of waterish substance as much as would fill a flaggon. When they had done they cutt off one one bitt and another another. Put a glass of wine in and some lint and so let itt alone till next day. Yn they opened itt again and injected Myrrhe, Aloes, and such things as resiste putrefaction and so bound itt up again. Every time they dressed itt they cutt off something of ye cancer yt was left behind. Ye chirurgions were for applying caustick, but Dr. Needham said "No, not till ye last, since she could endure ye knife." They prepared her bodie somewhat, yn let her blood ye day before. She endured it with infinite patience all along, not offering to lay her hand uppon itt to ease itt, but a warme cloth to ye other breast all ye time.

One of the chyrurgeans told her afterwards that shee had indured soe much yt hee would have lost his life ere he would have suffered ye like; and ye Dr. said hee had read yt woman would indure more yn man, but did not belevee itt till yn. The way how and where itt should be cutt away was markt out with Ink by one Dr. Edwards, who lives at Bridgnorth. Mrs. Townsend likt him very well. Hee said if they could prevent a Gangrena there was little fear, but it might be a cure iff she fell not into a feavour.

The extract is interesting as showing how completely the surgeon was subordinate to the physician. The case was clearly one of Brodie's tumours of the breast, so that Dr. Needham was correct in saying it was not a true cancer. Caspar Needham, of Peterhouse, Cambridge, took his M.A. in 1648, and then went to Oxford for the sake of the public library, and was incorporated 1655. He was one of the early Fellows of the Royal Society, and died at the age of 57 in 1679. He is buried in St. Bride's, Fleet-street, but nothing more is known of him. Dr. Edwards was Richard Edwards, of Bridgnorth, who was admitted an extra-Licentiate of the Royal College of Physicians on Dec. 19th, 1662.

There is a good instance of a long-standing pathological error in the next note about a patient who clearly had tetanus.

A worme in ye Gutts caused such a convulsive motion in one yt hee carried his heels and his head violently backwards, and so carrying his bodie into a roundness tumbled up and down with groaning.

WARD'S MEDICAL OBSERVATIONS AND SACERDOTAL DUTIES.

Ward must have had a singularly bad memory, for sandwiched between these details are such entries as, "Remember to excommunicate ye 2 persons yt committed Adulterie: ye woman yt turned Catholick: and to (warn) drunkards and ye like." The warning seems to have taken the form of a sermon, for a few lines farther on he says, "Remember to preach on 35 Jeremiah 14, 15, and to prove yt man is readie to obey man rather yn to obey God." The text is:—

The words of Jonadab the son of Rechab, that he commanded his sons not to drink wine, are performed; for unto this day they drink none, but obey their father's commandment: notwithstanding I have spoken to you, rising early and speaking; but ye hearkened not unto me.

I have sent also unto you all my servants the prophets, rising up early and sending them, saying, Return ye now every man from his evil way, and amend your doings, and go not after other gods to serve them, and ye shall dwell in the land which I have given to you and your fathers: but ye have not inclined your ear, nor hearkened unto me.

Sometimes it would seem that his medical observations must have interfered with his sacerdotal functions, or at any rate that his attention was divided, for—

"A woman yt died in childbed. I saw her just before shee departed. Shee was much troubled with convulsive motions wch are twitchings of the heart just before her expiring." "Full-chested people are long a-dying as was observed in Mrs. Williamson and such people as they are long in dying so are they long likewise ere they come to die." "Remember to write to Mr. Francis for a reason why a blow under the ear kills so suddenly rather yn in another part." "One used to say of his patients that when they were ill they are saints and when they are well they are devils."

HUMOROUS STORIES.—FOLK-MEDICINE.

He was fond of good stories, thus: "One seeing Dr. Bailey goe by a shop in Oxford said instantly, 'Why, there goes ye Dean of Swarum instead of ye Dean of Sarum.'" Dr. Richard Baylie matriculated as a plebeian from St. John's College July 3rd, 1601, aged 15; D.D. July 16th, 1633; President 1632; expelled 1648; restored 1660. Chaplain to King Charles I. and Laud; Archdeacon of Nottingham 1628; Dean of Salisbury 1635; died 1667. The extract throws a light on the Dean's language.

One having to say something in the close of a funeral sermon in commendation of ye person deceased he began itt thus: "It is an old saying De mortuis nil nisi verum. It was Mr. Doolie's brother of Alverston at ye death of our Mr. Lane who lived in Mr. Bishop's house."

Dr. Prideaux said of ye man in ye Gospel yt made excuse because hee had married a wife: says hee, What a fool was hee not to bring his wife with him for yn he had been ye more welcome.

Remember when I goe to London to buy Gusman and Jacobus de Voragine and some other such merrie authors to peruse in winter nights and keep up cheerful innocent mirth.

My Lord Paget seeing a little bit of mutton in a great platter of pottage put off his doublet. Itt being askt what hee intended to doe hee told them hee intended to swimme for ye bit of mutton. This I have heard.

Here and there pieces of folk-medicine are given, as:—

Children get ye Nephriticke disease by pissing in ye fire-place say nurses; and some say to pisse in a pot where some man hath pissed before is doing wrong, ye spirits without communicating with those within.

This appears to belong to the same class of superstition as the preservation of nail-parings and hair-clippings.

"Advise Mr. Benjamin Trapp to touch his swelling in his wrist with a dead man's hand wch may gett itt away." "For a person yt hath lost his stomach injoyne him every morning to eat a piece of Cheshire cheese strong of ye Rennet." "I have seen Cobwebs prescribed inwardly to be taken in conserves of red roses in a Bill (prescription) at Mch Potters, Nov. 28, 1658."

CONCLUSION.

I have entitled this Part I., as it only deals with the first six volumes of the MSS., and owing to pressure of work it has been impossible to make myself acquainted with the remaining ten. These six volumes I have transcribed myself; the rest have been abstracted by Mr. Bethell, your indefatigable Registrar. I hope in the future to deal with his work, for he tells me that it is full of interest; indeed, did time allow there is much that could have been added from the note-books I have read. They show us Ward as an epitome of his age, well read, quite clear in his opinions, with knowledge based on experiment, and yet with a naïve credulity which is surprising until we recall how little was known for certain and how much that is now certain had still to be learnt. His religion, so far as can be ascertained, dealt more with the broad aspect of truth and morality than with any speculative theology. His object was clearly to help his parishioners in their daily trials rather than to teach them the mysteries of the faith.

THE LATE MR. W. A. MEREDITH.—Mr. William Appleton Meredith, M.B., C.M. Edin., F.R.C.S. Eng., who met his death last week as the result of a fall from the skylight of his house at Little Massingham Manor, King's Lynn, was consulting surgeon to the Samaritan Free Hospital for Women in Marylebone-road, London. He was for thirty years on the active staff of this hospital, and published in our columns in 1897 the result of 250 operations for ovarian tumour. Mr. Meredith sat on the bench for the county of Norfolk. He was a native of New York naturalised in this country.

TRENCH FEVER:

A RELAPSING FEVER OCCURRING AMONG THE BRITISH TROOPS IN FRANCE AND SALONICA.¹

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AFTER all examples of the well-defined acute fevers had been separated from the cases of fever occurring in the British armies in France and in Salonica a considerable number remained in which the diagnosis was doubtful. A few were probably due to infection with *B. paratyphosus*, or even *B. typhosus*, although all bacteriological examinations had proved negative; but I do not think that these should amount to more than 5 per cent. of the cases in which bacteriological confirmation is obtained. The cases left over are most frequently diagnosed as "pyrexia of unknown origin," influenza, and rheumatic fever, the first of these being the only diagnosis which is indisputably correct. A small number of cases of true influenza with the characteristic catarrhal and general symptoms undoubtedly occur, although an attempt is rarely made to confirm the diagnosis bacteriologically. Rheumatic fever is rare. Herringham only saw five cases in France between October, 1914, and October, 1915, though it subsequently became rather more common, and I only saw a single definite case in Salonica; in the few cases so diagnosed, in which the pain is really localised in the joints, the arthritis is almost always gonococcal and not rheumatic. We are thus left with a number of cases of pyrexia of unknown origin. In this paper two varieties of a well-defined febrile disease are described, which account for a considerable proportion of these cases.

In the early summer of 1915 Major J. H. P. Graham drew attention to a type of fever occurring in the British Army in France, in which two periods of pyrexia were separated by a normal interval. Similar cases were recognised with increasing frequency, and the disease soon became widely known as "trench fever." In November, 1915, Captain G. H. Hunt and Major A. C. Rankin described 30 cases of the same type of trench fever, and a still fuller account was published in February, 1916, by Captain J. W. McNee, Lieutenant A. Renshaw, and Captain E. H. Brunt, in which for the first time two distinct clinical types of the disease were distinguished.

The disease was only observed among officers and men living near the trenches and in the personnel of hospitals, especially among orderlies of wards in which there were patients suffering from the disease. No cases occurred among ammunition columns, ordnance and headquarters' troops. It was for this reason that the name "trench fever" was adopted, though actual residence in the trenches themselves was certainly not an essential factor, and Hunt and McNee in their most recent communication state that cases have recently been met with further from the front.

According to Colonel Sir Wilmot Herringham, literally thousands of cases of the first type occurred among the troops in France and Flanders between the end of April and October, 1915; it was comparatively rare in the following winter, but increased again in the spring of 1916. It did not occur in Gallipoli and was not definitely recognised in Salonica until April, 1916. The second type, which was rare in France and Flanders until November, 1915, when it became more common than the first, has been very prevalent in Salonica since December, 1915. At first cases had to be recorded as "P.U.O." (pyrexia of unknown origin) or under the head of "influenza" or some other equally incorrect name, even when their nature had been recognised. For this reason it became customary to call the disease "pyrexia of unknown origin (A)," or shortly "P.U.O. (A)," as this designation did not introduce into the official records an unauthorised name, such as "periodic one day fever" or "Salonica fever," which had been used by some medical officers. The term "trench fever" was not used, as, besides being an unauthorised name, the disease was

¹ Amplified from an address given to the Salonica Medical Society in April, 1916.

common in Salonica at a time when no men were living in the trenches, and cases occurred in ammunition columns several miles from the trenches as well as in front line troops and among hospital attendants. When, however, in March, 1916, we recognised that the disease was identical with the long form of trench fever described by McNee, Renshaw, and Brunt, and when a month later the common short form of trench fever seen in France and Flanders became prevalent in Salonica, it seemed wise to adopt this name.

A few cases with symptoms intermediate between the two types of trench fever have been observed in France and in Salonica, and the initial symptoms are very similar, but the temperature chart is so different in typical cases, and the second class occurred in such large numbers without the first in the winter months, although it was very rare in comparison with the first during the summer of 1915 in France, that it cannot yet be regarded as definitely proved that the two diseases are really due to the same infection, as is generally believed by British observers in France.

My attention was first drawn to the disease in Salonica at the beginning of January, 1916, by Lieutenant-Colonel D. J. McGavin, Major D. S. Wylie, and Major H. T. D. Acland, of No. 1 New Zealand Stationary Hospital. At first it was not widely recognised, but as medical officers became more familiar with its characteristics it became clear that it was extremely common, especially in certain units.

With the exception of one man, who contracted the disease whilst in hospital from another cause, all of the cases observed in Salonica up to March, 1916, belonged to divisions which had been several months in France. None had been in Gallipoli or Serbia. The short form of trench fever had occurred in several of the affected units whilst they were in France. It is highly probable that these divisions brought the infection with them. In March, 1916, the long form of trench fever began to occur in a division which had been in Serbia, but not in France. Some of the men had been in Gallipoli, but most had come straight to Salonica from England. In April groups of cases of both forms of trench fever appeared in units belonging to other divisions, which had been free from the disease since their arrival at the end of 1915. The later cases probably became infected by men coming in drafts from France. The disease also developed among the personnel of some of the hospitals to which the patients were sent. It does not appear to have been observed among French troops either in France or Salonica.

Early in 1916 cases of the first variety were observed in Austrian troops in the Tyrol, and cases of the second variety in a German field hospital on the Eastern front.

Pathology.

Before trench fever could be accepted as a clinical entity it was necessary to prove that it was not an aberrant form of some other condition, such as paratyphoid fever, which it may closely simulate during the first pyrexial period, true relapsing fever, which it resembles in so far as the fever is of a characteristic relapsing type, and malaria, which is sometimes simulated by the shorter and sharper pyrexial attacks. But the blood taken at the height of both the initial and the later febrile periods has always been sterile on cultivation, the Widal reaction has been consistently negative at every stage of the illness, and no spirochæte or malarial plasmodium has been found in spite of repeated examinations of blood films taken both during febrile and afebrile periods.

McNee and Renshaw found that trench fever could be transmitted to healthy soldiers by the intramuscular or intravenous injection of the blood of men suffering from the disease. Injection of the washed red corpuscles had the same effect, but the plasma and serum were not infective.

One attack does not seem to protect against reinfection. I saw a man with the long type of trench fever in April, 1916, in Salonica; he had been seen by Captain McNee in a typical attack in September, 1915, while in France, and had been quite well in the interval. It is possible, however, that there was no reinfection, the original infection having remained latent between the two attacks.

As all attempts to discover the infective organisms have failed and as no fatal case has occurred, the nature of the disease remains unknown. The striking periodic character of the fever in the long type of case, the considerable increase in the proportion of large mononuclear leucocytes

which has been found on several occasions, and the evidence pointing to an intracorporeal infection suggest a protozoal rather than a bacterial origin.

Method of Propagation.

There is no nasal, pharyngeal, or bronchial catarrh, and, except for constipation, gastro-intestinal symptoms, though occasionally well marked, are generally completely absent. It is probable, therefore, that the disease is not conveyed by the respiratory secretæ or by the fæces, but through the intermediation of some insect. The occurrence of the long form of the disease during the winter months shows that the infection can be conveyed in the absence of mosquitoes and other flying insects; though Herringham found mosquitoes in France throughout the winter, there were certainly none in Salonica. Fleas have been scarce in both countries, and the men themselves rarely complain of them. Almost all patients admitted that they were lice-infested up to the time of their entry into hospital, so that it is quite possible that the disease is conveyed by lice. A hospital orderly, who had been free from lice since his arrival in Salonica, had to carry the kit of a number of new patients suffering from trench fever on May 2nd, 1916. The clothes were swarming with lice, and the same evening he found some in his own clothes. He got rid of them in the course of a few days, and on May 20th an attack of trench fever began. He was not employed in the wards and he never came in contact with any patients suffering from the disease. He was the first case of trench fever in the personnel of the hospital to which he was attached. The incidence of trench fever is least in the cleanest battalions and in the divisions which have the best facilities for bathing. In some units a successful campaign against lice has been immediately followed by a great diminution in the incidence of trench fever. As a result of the rigorous measures taken in Salonica the disease almost disappeared in the summer of 1916. Captain A. L. Urquhart developed the short form of trench fever after allowing the lice from a patient with this form of the disease to bite him, and Captain McNee tells me that his observations in France have led him to agree with the conclusion I came to in Salonica—that the disease is spread by lice.

Cold, wet, and fatigue appear to be exciting causes in a man who has become infected, but has so far had no symptoms; thus Captain Hay noticed that in almost all cases in his regiment in Salonica the fever began two or three days after the patient had been wet through. In several instances a group of men sleeping in the same tent have been affected.

Some patients appear to be carriers, who do not lose the infection completely for several months, but have recurrences from time to time, during each of which they may infect an additional number of men. A sergeant, who had been in good health whilst in France between December, 1914, and November, 1915, developed the long form of trench fever early in December, 1915, directly after he left France for Salonica; in the following four months he was in hospital five times for a week or more, though he was perfectly well in the intervals. Every time he returned to his unit he became lice-infested again and appeared to infect some of the men with whom he came in contact, about forty men of his company, including six sergeants, having been taken ill with trench fever between January and March; one of the sergeants had wrestled with him, another had danced with him, a corporal slept next to him, and a private sat next to him for some lectures.

Incubation Period.

As a result of observations in Salonica on cases arising in hospital when a patient had been admitted for some other condition, I came to the conclusion that the incubation period is between 15 and 25 days; in the case of the hospital orderly already described it was probably 18 days. Quite independently, Hunt and McNee in France concluded that it was between 14 and 24 days. The following three cases are typical of those which led to my estimate of the incubation period.

CASE 1.—Sergeant — was admitted for rhinitis on Dec. 27th, 1915, into a ward in which there were at the time two patients suffering from the periodic form of trench fever, no other cases of which had yet been observed in his unit. On Jan. 1st, 1916, he was moved into another ward in which there were, and have since been, no such cases. When convalescent from the rhinitis, which had been accompanied by no pyrexia or pains in the head, back, or legs, he suddenly

became ill on the evening of Jan. 24th. His temperature in the morning was normal, but at 6 P.M. it was 104° F. This proved to be the first pyrexial period of a typical attack of the periodic form of trench fever. It was probable that the infection was contracted from the other cases in the ward between Dec. 27th and Jan. 1st, between 23 and 27 days before the onset of symptoms.

CASE 2.—Private — went to France at the beginning of the war with the 1st — Regiment. He was wounded in January, 1915, and was in England until the end of 1915, when he came to Salonica, joining the 2nd — Regiment, which had come there from France in November, on Jan. 13th, 1916. A few days after he arrived he became lice-infested. On Jan. 21st he went to a field ambulance and then to a casualty clearing station with a hydrocele; he was transferred to a stationary hospital on Feb. 6th. On the 12th his temperature rose and a typical attack of the periodic form of trench fever began. His clothes were disinfected when he entered the casualty clearing station, and he had no more trouble with lice after his admission there. It is probable that he contracted the disease whilst with his regiment—i.e., between 24 and 16 days before the onset; as he was not lice-infested until he had been with his regiment some days, the incubation period was probably about 20 days.

CASE 3.—A patient was admitted into hospital for quinsy. He was in a ward in which there were no other cases of trench fever, but he developed the disease 14 days after admission. He had probably contracted it whilst still with his regiment, in which at least one case had already occurred, so that the incubation period was over a fortnight.

Symptoms.

The disease generally begins suddenly without any premonitory symptoms, but a feeling of malaise occasionally precedes the attack for a day or two. The patient complains of severe headache, especially frontal and behind the eyes, and this is rapidly followed by pain in the lower part of the back and on the second or third day in the legs. Pain in the neck is occasionally observed; in two cases mentioned by Hunt and McNee pain and stiffness in this region were so severe that a lumbar puncture was performed in order to exclude meningitis, and I also saw two cases in Salonica in which this was done. The patient generally shivers, but there is never a definite rigor; he is occasionally flushed and often sweats profusely. The bowels are regular or constipated, and there is no nasal or bronchial catarrh; the appetite is lost, the tongue is moist and often slightly furred, and occasionally mild pharyngitis is present. Herpes labialis has occurred in a few cases, but less frequently in the long than in the short form of the disease. There is no rash.

The onset is sometimes extremely abrupt; the patient suddenly feels giddy with a burning head, he shivers and may be very short of breath, and complains of a pain in his left side. He has to fall out if on parade or marching and has often great difficulty in returning to camp without assistance.

In a few cases, in which constipation is generally present, there is some abdominal pain with slight distension and tenderness, and there may be nausea and even vomiting at the onset. Four out of my first 50 cases of the periodic type were sent to hospital diagnosed as appendicitis; in one a normal appendix was removed and a second would have been operated upon had he not refused. The abdominal symptoms rapidly disappeared, and in the relapses they were less prominent than the other symptoms.

When the pain in the legs is severe there may be some cutaneous hyperæsthesia over the shins. In several cases the periosteum of the tibia has seemed to me to be rough and thickened, as it pits slightly on pressure, although no pitting of the subcutaneous tissue was present. The tenderness is most marked over the lower half of the shins and may be very severe, a comparatively slight pressure causing the patient to cry out, and the pain produced may last for hours. A less degree of tenderness is often present in the tendons behind the knee, and occasionally in the ligamentum patellæ and along the course of the femur. The shins are always tender, even if the patient complains of no pain in the legs, but tenderness appears most marked in groups of cases and at certain times. Graham did not mention it, and it was not observed in the earliest cases in Salonica. There is little or no tenderness of the calves or other muscles. The knee- and ankle-jerks are normal.

In the first attack the spleen is sometimes palpable or is found to be enlarged on percussion and there may be some tenderness in the left hypochondrium. Although this was

certainly the case in Salonica, Herringham and Hunt and McNee never found any splenic enlargement in the cases they observed in France.

Leucocytosis is often, but not always, present during the pyrexial attacks; the count varied between 4700 and 22,000 per c.mm. in 35 cases, mostly of the short type, examined in France (Hunt and Rankin; McNee, Renshaw, and Brunt). In many of the cases examined both in France and in Salonica there was a relative increase in the large mononuclear cells (Elworthy, Urquhart). Polychromatophil cells above the normal size, with well-marked punctate basophilia, were observed by McNee, Renshaw, and Brunt in France, but Elworthy, working in Salonica, came to the conclusion that they only occurred in the later stages of the more severe cases. The percentage of hæmoglobin is generally about 80, though the number of red corpuscles is undiminished.

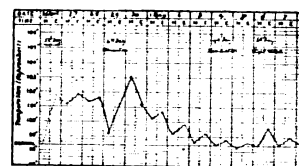
In the *short form of trench fever* the temperature rises rapidly to between 102° and 104° F., but the pulse-rate is only slightly increased. On the third or fourth day the temperature suddenly falls, generally to normal or subnormal, but there is no corresponding improvement in the symptoms. After an interval of a few hours it rises again, and then after another two to five days it falls to normal. On this occasion there is immediate relief to all of the symptoms. (Chart 1.)

CHART 1.



Short form of trench fever.

CHART 2.



Short form of trench fever.

In some cases the remission on the third or fourth day does not occur, the temperature remaining raised for about a week. There is often a single relapse after an interval varying from a few hours to ten days, but generally less than four days. The temperature rises to 100° or 101° for 24 or 48 hours, during which the symptoms return with diminished severity. (Chart 2.) The patient is generally fit for duty almost immediately after the temperature falls again. Many cases have subsequently been kept under observation by Hunt and McNee for weeks or months without any return of fever or other symptoms, so that there could be no question of additional relapses occurring after the patient had been discharged from hospital.

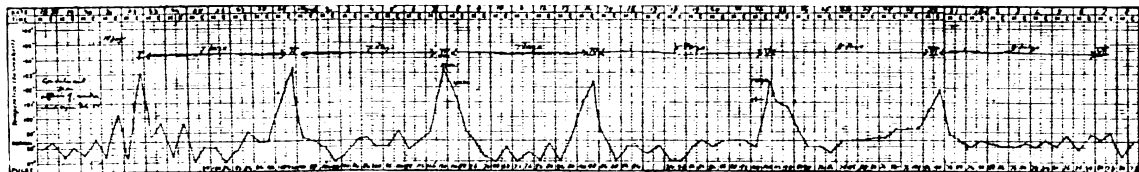
In the *long or periodic type of trench fever* the temperature rises to between 101° and 104° F. on the first evening. The initial attack is variable in duration; the temperature may be normal the first morning, high in the evening, normal the second morning, and rather less high the second evening than the first, after which it remains down. In other cases the first attack may last as long as four or five days, the temperature being always lower in the morning than the preceding and following evening, the highest temperature being reached on the second or third day; in one case it reached 105.8° on the third evening, though it was normal the previous and following mornings. The pulse is generally accelerated in proportion with the temperature, but at first it may be considerably faster. With the fall of temperature at the end of the initial attack all the symptoms disappear, and the patient is often sent back to duty. After being well for two to ten days he complains of a return of headache and pain in the legs, which culminate at night; the temperature rises in the evening to a point which is generally a little lower than the highest temperature in the first attack. The temperature falls to normal or nearly normal the next morning, and either remains down or rises to a less extent the second evening, thereafter to remain normal. The general symptoms are much less severe than in the first attack and the acceleration of the pulse is less marked, but the pain in the legs and tenderness of the shins are generally greater, and they may not disappear completely in the interval between the second and third attacks, though the headache, which generally remains the most prominent symptom during the attack, is never present in the apyrexial periods. The pain in the legs is sometimes extreme and may prevent sleep; in other cases it is comparatively slight

and the patient looks and feels remarkably well, considering that he has a temperature of 101° or more. Recurrences follow periodically, the maximum temperature being always reached in the evening. (Chart 3.) The interval between the height of the attacks is fairly constant in each case,

Diagnosis.

The diagnosis can only be made with certainty from a study of the temperature chart, but the association of pyrexia with tender shins is very suggestive of trench fever already

CHART 3.

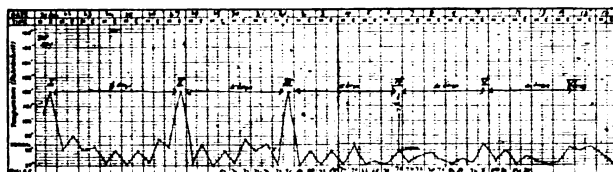


Periodic form of trench fever.

but it varies in different cases between four and eight days, five being the most common interval. Each succeeding attack is generally milder than its predecessor, and the temperature is rather lower, but in severe cases the patient feels weaker in the later intervals, and the

in the first attack. Painful and tender shins have, however, sometimes been observed in the Salonica Army in the absence of fever, and the unsatisfactory name of "trench shin" has sometimes been used to describe such cases. Some of the cases regarded as examples of the short form of trench fever are probably really periodic cases, as there is no doubt that the later bouts of pyrexia are often entirely missed owing to the short time they last, the patient having meanwhile gone back to duty or if in hospital the evening temperature may have been taken at 5 P.M., although the rise only began at 7 P.M. or later. Several medical officers, who were very familiar with the early stages of the disease, only recognised the periodic rise of temperature after their attention had been specially drawn to its occurrence, as their patients had returned to duty after the first or second attack and had not "gone sick" for the later and comparatively slight recurrences.

CHART 4.



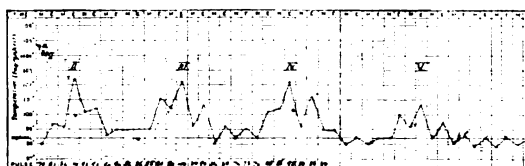
Periodic form of trench fever. In the fourth attack the rise of temperature was missed at the ordinary hour of taking it.

pain and tenderness of the legs are more persistent. The later attacks may be of such short duration that the rise in temperature is not recorded at all if it is only taken twice a day. (Chart 4.) On the afternoon and evening of the day on which the attack is expected the tem-

perature should therefore be taken every two hours, especially if there is any pain in the head or legs, as in most cases the patient knows from his sensations that there is going to be a relapse, even before the temperature rises. The temperature is sometimes only raised for three or four hours. In one case, for example, the morning temperature was 98° , at 5.30 P.M. it was 99° , at 6.30 P.M. 100° , and at 8 P.M. 101° ; at 9 and 10 P.M. and at 8 A.M. the following morning it was 98.4° .

In another case it was 97.6° at 5 P.M., though the patient had had a headache since the morning, but 101.2° at 8 P.M., 102.4° at 10 P.M., 101.4° at 2 A.M., 100.2° at 6 A.M., and 98° at 8 A.M., so the chart showed no rise, as the temperature in the ward was taken at 8 A.M. and 5 P.M. This liability to miss the rise in temperature accounts for the fact that it may appear from the chart that an attack has been missed, the interval between two of the later attacks being double that between the earlier ones; a headache may have been felt and a rise in the pulse-rate recorded half way between the attacks. In some cases the temperature is sub-normal between the last two attacks, in which it rises to normal but no higher. In a few cases the temperature remains raised for three or even four days in each attack, the evening temperature being always higher than the morning temperature, which may be normal on the first and last days; the highest point is generally reached the second evening. (Chart 5.) In one case the third relapse was of exceptional duration and severity; this may have been due to a relapse having been missed, as the apyrexial period which preceded it was of double length. (Chart 6.)

CHART 5.

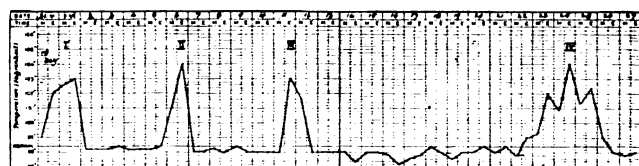


Periodic form of trench fever, with each attack lasting three days.

though it was generally recognised by medical officers that they were not identical with the familiar forms of influenza. Thus, there is never any nasal or bronchial catarrh, the patient rarely appears or feels seriously ill, except sometimes during the first two days of the first attack, and respiratory, and nervous complications never occur. The periodic return of pain and pyrexia and the pain and tenderness of the shins are quite characteristic and prevent confusion with influenza except at the onset.

The possibility of malaria must always be considered, and a blood film should be examined for the malarial plasmodium before making a definite diagnosis in cases of doubt, especially when malaria is prevalent or if the patient has previously had malaria. The differential leucocyte count is of no assistance, as there is a relative increase in large mononuclear cells in both diseases. The longer intervals between the attacks, their invariable occurrence in the

CHART 6.



Periodic form of trench fever. The third relapse (marked IV.) of exceptional duration and severity following an interval of double length.

evening instead of at various times of the day, the absence of true rigors and the failure of quinine given by mouth to modify the course of the illness are distinguishing features of trench fever. Several old soldiers at first thought that they were suffering from malaria, but they subsequently realised that the disease must be different, as they never

before had had severe pain and tenderness in their shins.

A few cases of true *relapsing fever* occurred among British as well as Indian troops at Gallipoli, but only eight Indian and no British soldiers had been attacked by the disease in Salonica up to the end of April. The disease was, however, common in the Serbian Army in 1915. It was actually first described by Hippocrates in the Greek island of Thasos; so it is necessary to be on the look-out for it among British as well as Indian soldiers at Salonica, and at least one case occurred in June, 1916. In six cases I saw with Captain F. F. Strother Smith, I.M.S., the pyrexial period was generally longer, varying between two and a half and six days, and the fever was higher than in trench fever, the maximum temperature in each attack being between 104° and 105·6° F. Successive relapses did not diminish in severity unless they were cut short by injecting salvarsan, the effect of which was almost instantaneous. The patients were extremely ill and often delirious during the pyrexial periods, and the delirium occasionally continued after the temperature fell. Bronchitis was common and there was no pain in the legs or tenderness of the shins. The apyrexial periods varied between two and eight days, six days being the most common, but the periodicity was less regular than in the periodic type of trench fever. The spirochaete was found without difficulty in the blood during the pyrexial period in every case. The disease may, however, be less severe when it occurs among Europeans.

Prognosis.

There have been no fatal cases and the patient never appears seriously ill, except occasionally for a very short time in the first attack.

Until the commencement of the hot weather in Salonica at the end of May no complications had been observed, with the exception of phlebitis of the femoral vein in one case and slight jaundice in two cases, but the latter, at any rate, was probably accidental. With the onset of the hot weather it was found that trench fever was often accompanied by a moderate degree of cardiac dilatation, which resulted in the development of "soldier's heart," if the patient returned to full duty too soon. Endocarditis has never occurred. Hunt and McNee have not observed albuminuria, but Herringham found a trace of albumin, which soon disappeared, in a few cases. I know of one case in which albuminuria occurred in Salonica, and I have seen a similar case—a soldier from Flanders—in London.

The total duration of the periodic type of trench fever from the onset to the end of the last attack is generally between four and six weeks, but some cases appear to abort, and in a few others attacks may recur for several months, the patient remaining quite well in the intervals. I saw a sergeant with the periodic form of trench fever in January, 1916, in Salonica; he had had similar attacks at intervals since August, 1915, when he first became ill in France. In most cases the patient rapidly gets strong again after an attack, and is generally fit for duty after the second period of pyrexia, though he may have to rest for a few hours when the later attacks occur. Sometimes, however, great exhaustion follows and convalescence is slow.

Prophylaxis.

As the disease is probably conveyed by lice, which become infected by biting a patient during an attack, every effort should be made to keep troops free from them. All cases of trench fever should either be sent to hospital or isolated, and the patient's clothes and bedding should be specially disinfected as well as that of all men who have recently slept near him. After the initial or the second attack a man is often able to return to duty; it is very important that he should be kept under observation, and if he again becomes verminous his clothes and bedding should again be disinfected. Men who are still having attacks or have recently recovered should sleep together, isolated from the other men in their unit, but there is no reason why they should not work with them.

Treatment.

No treatment has yet been found which prevents the periodic return of attacks or which is really effective in overcoming the pain. It is generally agreed that in the first attack considerable relief occurs if the tendency to constipation is prevented by aperients. Acetyl-salicylic acid is the most effective analgesic drug. Quinine given by mouth

has no obvious effect, but I have found that the subcutaneous injection of gr. x. of the bihydrochloride whenever the temperature rises above 99° appears to put an end to relapses in prolonged cases. Salvarsan and antimony have proved useless. In one severe case Hunt and McNee tried intravenous injections of eusol without success and in two others 20 c.c. of the serum of a convalescent patient were injected intravenously without influencing the course of the illness.

Numerous local applications, both hot and cold, have been used for the painful shins; some of them have appeared to do good in certain cases, but the most frequently successful seems to have been a cold compress of saturated magnesium sulphate solution, which was first recommended by Captain D. S. Harvey. In slight cases gentle massage has given temporary relief. I have recently seen a number of cases with Captain W. R. Reynell, in which considerable improvement followed the use of a galvanic bath with frequent reversals of the current. In a few cases in Salonica the periosteum was incised, but when this was done on one side only, improvement occurred with equal rapidity on the opposite side. Even if the results had been more promising I should regard the operation as quite unjustifiable, as the pain always disappears spontaneously in the course of a few weeks and often quite rapidly even when it is exceptionally severe.

References.—J. H. P. Graham: *THE LANCET*, 1915, vol. II., p. 703. G. H. Hunt and A. C. Rankin: *THE LANCET*, 1915, vol. II., p. 1133. J. W. McNee, A. Renshaw, and E. H. Brunt: *Brit. Med. Jour.*, 1916, vol. I., p. 225. W. P. Herringham: *Quarterly Journal of Medicine*, 1916, vol. IX., p. 429. G. H. Hunt and J. W. McNee: *Quarterly Journal of Medicine*, 1916, vol. IX., p. 442. F. G. Oandler: *THE LANCET*, 1916, vol. I., p. 461. B. Hughes: *THE LANCET*, 1916, vol. II., p. 474. H. Schrotter: *Wien. klin. Woch.*, Band XIX., p. 197, 1916. H. Werner: *Munch. med. Woch.*, Band LXIII., p. 402, 1916.

THE OPERATION OF LARYNGO-FISSURE.

SOME NEW INSTRUMENTS SPECIALLY DESIGNED
FOR IMPROVING THE TECHNIQUE.

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THE brilliant results obtained during recent years by the operation of thyro-fissure in cases of early cancer of the interior of the larynx, more especially in the vocal cord area, have brought this comparatively old operation more prominently to notice.

An anterior median vertical fissure of the larynx may include fissure of the thyroid or cricoid cartilages, or of both. Fissure of the cricoid alone is probably a very rare procedure. In the treatment of chronic inflammatory stenosis of the larynx a full laryngo-fissure through the thyroid and cricoid cartilages is always performed, and usually the incision extends through some rings of the trachea, thus constituting a laryngo-tracheostomy or tracheo-laryngostomy. In operations for malignant disease, and in very exceptional forms of non-malignant disease, the lesser form of laryngo-fissure—i.e., thyro-fissure—is the operation of choice, the cricoid being left intact. This shorter form of laryngo-fissure is frequently alluded to as thyrotomy, and that nomenclature was not only employed by Butlin and Semon in recording their numerous cases, but their example has been largely followed by specialists and general surgeons all over the world.

Thyrotomy as a term is not free from ambiguity, however, and does not differentiate between incising the thyroid gland and the thyroid cartilage. The same criticism in a lesser degree applies to thyro-fissure. Durham¹ in 1883 expressed his opinion that the term thyrotomy is more applicable to cutting operations on the thyroid gland, and suggested that any operation in which section of one or other or both of the larger laryngeal cartilages is made should be termed "laryngo-chondrotomy." For the sake of clearness Tilley² has both spoken and written of thyro-chondrotomy instead of thyrotomy. Hill,³ in discussion, has suggested that laryngo-fissure should be retained for the full incision where both cartilages are fissured (which is occasionally necessary in cases of considerable subglottic extension of the lesion), and thyro-chondro-fissure adopted for the shorter form of laryngo-fissure.

¹ Holmes's System of Surgery, vol. I., 1883, p. 768.

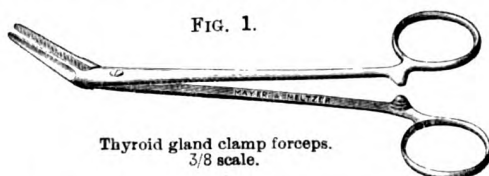
² Brit. Med. Jour., 1898, vol. II., p. 1216; also Proc. Roy. Soc. Med. Laryngol. Sect., vol. IX., Dec. 3rd, 1915, p. 48.

³ Proc. Roy. Soc. Med., Laryngol. Sect., vol. VIII., Dec. 4th, 1914, p. 35.

In the title of this communication I have employed the term laryngo-fissure in its old comprehensive sense as including both the longer and shorter incisions. The body of the paper is largely concerned with the lesser variety of laryngo-fissure, and this I have alluded to as thyro-fissure, considering it less ambiguous than thyrotomy and a sufficiently well-understood term.

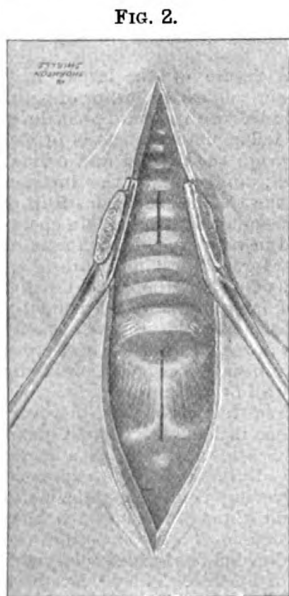
A comparison of the statistics of this operation from 1889 to 1914—i.e., a period of 25 years—shows such great progress, especially during the latter half of this period, that we now expect to obtain a lasting cure in 80 per cent. of cases. The death-rate at the present time has also been reduced to less than 4 per cent., and in the hands of the very experienced and skilled operator to nil. Nowhere in the whole of the realm of the surgery of malignant diseases, says Chevalier Jackson,⁴ have such results been obtained. This success is due partly to the earlier diagnosis of the disease, and partly to improvement in operative procedure.

While diagnosis and technique have improved, there still remains room for a better instrumentarium. Just as in endoscopy the wise selection of instruments may be a great factor of success, so in this operation of thyro-fissure it is important that suitable instruments should be used if we are to attain the best results. The instruments⁵ which I have designed for this operation have been for some years in use,



though they have not yet been formally introduced to the profession, since it was my desire that they should first stand a fair trial. They are now used and recommended by StClair Thomson⁶ and other of my colleagues.

Thyroid gland clamp forceps.—In the preliminary operation of median tracheotomy it is often necessary to separate the thyroid isthmus from the trachea and divide it down the middle line in order to expose the trachea. These forceps are of use in clamping each side of the thyroid isthmus before division and ligaturing. It is advisable to ligature the isthmus on each side after division, even though its vascularity may be only slight, so as to avoid not merely the chance of secondary hæmorrhage, but also risk of acute thyroidism, which has occasionally occurred as a sequel and depends upon the unregulated excessive absorption of thyroid secretion into the system.

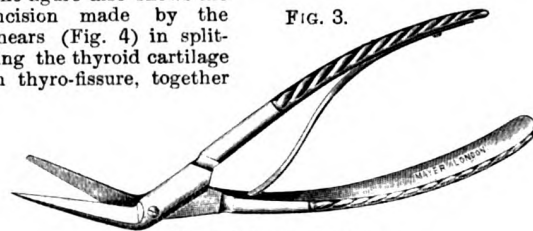


Shows the clamp forceps in position and the incisions made in the thyroid cartilage in thyro-fissure and in the trachea. $\frac{1}{2}$ scale.

tions, and for this purpose four of these forceps may be

required. The advantage of this median tracheotomy, which is intermediate between the high and low operation, is that the trachea is not so deep as in the low operation, whilst there is ample room above the tracheotomy tube to allow room for the operation on the larynx.

Fig. 2 shows the clamp forceps attached to the two halves of the thyroid isthmus after separation in the middle line. The figure also shows the incision made by the shears (Fig. 4) in splitting the thyroid cartilage in thyro-fissure, together

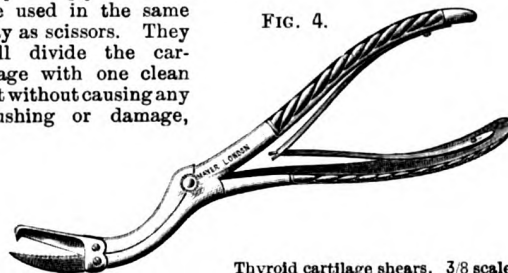


Tracheal shears. $\frac{5}{8}$ scale.

with the correct position of the incision in the trachea—i.e., through the third and fourth rings, for the introduction of the tube in the median operation of tracheotomy.

Tracheal shears (Fig. 3).—These are short, sharp-pointed scissors of the turbinotome type. They are useful for tracheotomy in cases where the tracheal rings are ossified, and difficulty is experienced in cutting them with a knife. They are also useful for splitting the cricoid cartilage and opening the lower quarter of the larynx in those cases where more room is required. The point of the lower blade being sharp they can be also used for “stabbing” the trachea if necessary in place of a knife.

Thyroid cartilage shears (Fig. 4).—These are used for splitting the thyroid cartilage at the angle where the two alæ meet in the middle line so as to expose the interior of the upper three-quarters of the larynx, and are also useful in splitting the cricoid cartilage in those cases where there is difficulty in reaching the subglottic extension of the growth and where additional room is required. They are very strongly made and are used in the same way as scissors. They will divide the cartilage with one clean cut without causing any crushing or damage,



Thyroid cartilage shears. $\frac{3}{8}$ scale.

thus avoiding the risk of perichondritis and sepsis, which has in some cases followed the use of other instruments.

The lower blade has a very fine saw edge to prevent lateral slipping during cutting, and is curved and pointed to facilitate its introduction through the crico-thyroid membrane, under the lower edge of the thyroid cartilage, and upwards between the vocal cords. The upper blade is provided with a sharp spike at the extremity of its cutting edge in order to assist in transfixing the larynx and keeping it steady during the cutting. The larynx can therefore be carefully divided through the anterior commissure so as not to injure either vocal cord. The position of the handles in relation to the blades is such that they lie well above the neck, so that the tracheotomy tube already inserted in the trachea does not get in the way of the operator's hands.

Experience has proved the great advantage of these cutting shears over any other instrument used for this purpose. They may also be used in the treatment of stenosis of the larynx by the operation of laryngostomy—i.e., laying open the larynx anteriorly by fissure of the thyroid and cricoid cartilage and keeping it open for a long period of treatment. In such a case they will divide the cartilages, whether ossified or not, and soft parts, including the skin, at one cut.

Fig. 5 shows the correct way of introducing the cutting shears in the operation of laryngo-fissure. The sharp-pointed lower blade of the instrument is seen entering the

⁴ Peroral Endoscopy and Laryngeal Surgery, 1915.

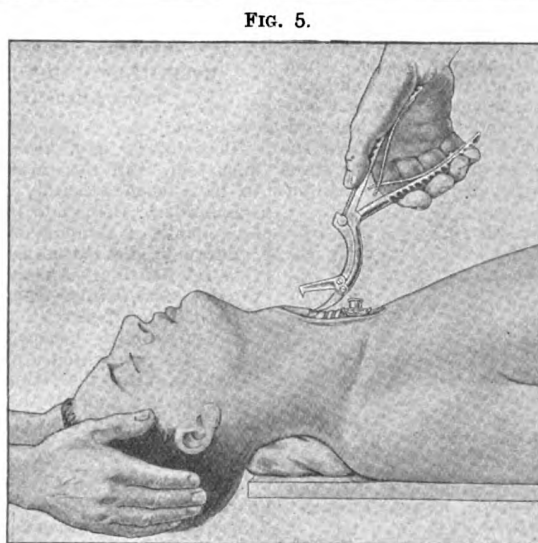
⁵ Shown at the Laryngological Section, Royal Society of Medicine. See Proc. Roy. Soc. Med., Laryngol. Section, vol. ix., Dec. 3rd, 1915, pp. 34-36.

⁶ Intrinsic Cancer of the Larynx after Operation by Laryngo-fissure, Proc. Roy. Soc. Med., Laryngol. Section, vol. ix., Nov. 5th, 1915, p. 8.

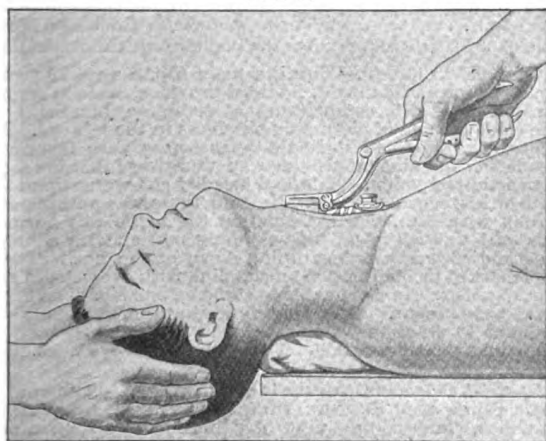
crico-thyroid membrane to reach its position between the vocal cords. It also shows the position of the patient's head, neck, and shoulders; the head being supported by an assistant so as to keep the parts in the middle line.

Fig. 6 shows the position of the shears in cutting through the thyroid cartilage. The instrument is removed by releasing the pressure of the fingers on the lower handle, which causes the upper blade to spring back and leaves the lower blade to be withdrawn in the opposite direction to its introduction.

Thyroid cartilage saw (Fig. 7).—This is a small fine saw which is not so cumbersome as those formerly in use. It is intended for partially sawing the larynx before using the shears in those cases in which the upper and lower edges of the thyroid cartilage are ossified, as is so frequently met with in elderly people; or it may be used to saw partly through the whole length of the thyroid angle in the middle line in order to make a groove for the cutting shears. The depth of the saw blade is only 4 mm., so that it is unlikely to do any damage to the intralaryngeal soft parts. The



Shows correct way of introducing cutting shears in laryngo-fissure.

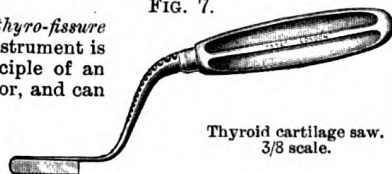


Shows position of shears in cutting through thyroid cartilage.

shaft is bent in such a way that when the saw is used by the operator standing above the head of the patient, the patient's chin does not get in the way of the operator's hands. If it is used from below the operator's hands are well away from the neck and do not come in contact with the tracheotomy tube.

Self-retaining thyro-fissure retractor.—This instrument is made on the principle of an abdominal retractor, and can be used either for the cervical skin incision, the thyro-fissure, or the complete

FIG. 7.



Thyroid cartilage saw.
3/8 scale.

laryngo-fissure. It is most useful for separating the lateral halves of the larynx after they have been split open by the shears and retaining them in any position. With this retractor (Fig. 8) the larynx may be opened and closed, gradually or quickly, with the greatest facility without overstraining or damaging the two separated halves of the

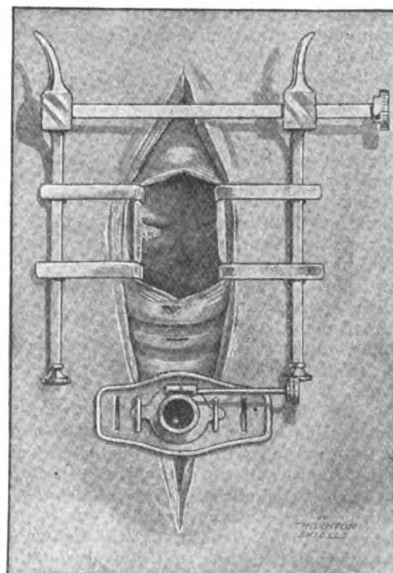
FIG. 5.

thyroid cartilage, as may occur with ordinary hand retractors, and which may give rise to subsequent discomfort and difficulty in swallowing. The retracting hooks may be so adjusted, or one removed on either side, that they do not interfere with the dissection of the growth from the inner wall of the larynx. It can also be used if necessary to hold back the skin and soft parts during the preliminary operation of tracheotomy. It therefore does away with the necessity of one assistant.

Perichondrial elevator.—With this instrument the soft parts together with the perichondrium are raised off the inner surface of the thyroid cartilage as is done in the parallel operation of subperichondrial resection of the septum. As the cartilages are usually ossified in these cases periosteal rather than perichondrial resection would perhaps be the more correct description. It may also be used as a dissector for separating the muscles in the middle of the neck and for raising the thyroid isthmus off the trachea in the preliminary operation of tracheotomy. The handle of the instrument may be passed under the isthmus and used as a director during its division.

Intralaryngeal forceps.—These are especially useful for grasping the growth during its removal with the scissors. They are made with smooth circular unserrated ends which prevent tearing into or crushing the growth, such as may occur with ordinary dissection or tenaculum forceps, and consequently the risk of reinfecting the wound by cell transplantation is avoided. The importance of avoiding this reinfection has been referred to by many writers. Lack,⁷ amongst others, has discussed this matter. Crile⁸ advises that to avoid reimplantation of cancer cells no instrument or sponge that has touched the cancer surface should be used again, nor should they touch anything else that may be used again in the operation. These forceps may also be used for inserting the tethered sponge or gauze into the trachea after the larynx has been opened. They are made either straight or angular (Fig. 9) to suit the convenience of operators.

FIG. 8.



Shows the two halves of the thyroid cartilage held apart by the self-retaining retractor, exposing a full view of the inside of the larynx. On the right vocal cord is seen the growth.

⁷ THE LANCET, 1896, vol. i., p. 1638.

⁸ Operative Surgery of the Nose, Throat, and Ear. By Hanau W. Loeb. Review in Journ. of Laryngol. and Rhinol., 1915, vol. xxx., p. 511.

Intralaryngeal scissors (Fig. 10).—(a) Straight blades; (b) blades curved on the flat; (c) blades curved at right angles; and (d) straight blades with angular shafts. These have been made with small yet very strong blades, and long shafts which are strengthened to prevent strain and consequent weakness in the cutting blades. After the perichondrium with the soft parts have been raised from the inner wall of the larynx by the periosteal elevator these scissors are of great service, for they can be easily manipulated inside the laryngeal cavity without interfering with the view; consequently the entire cutting away and removal of the growth may be performed under direct vision. The straight scissors or those curved on the flat are used in making the upper and lower incision—i.e., above and below the growth—before backwards. The rectangular scissors are used to separate the mass posteriorly from the arytenoid cartilage.

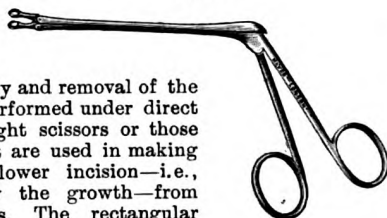
Lack⁹ has described and summarised the difficulties of this operation as mainly due to the fact that "splitting the thyroid cartilage and pulling aside the two halves with retractors gives a very poor view of the interior of the larynx; that with this opening there is great difficulty in manipulating forceps and cutting instruments, also in defining the limits of the growth and removing it thoroughly." He goes on to say that in thyro-fissure to obtain sufficient access it is often necessary to divide the thyrohyoid membrane and "to pull the two halves of the larynx forcibly apart"; in consequence, the patient after the operation may have "difficulty in swallowing." Also, that after thyrotomy there is often "considerable pain for some days," due probably to the "wrenching apart" and "bruising of the tissues" from the prolonged retraction, &c. He therefore suggests that the difficulties are best overcome by resecting a portion of the healthy cartilage underlying the growth in one piece together with the growth.

The chief object, however, of the operation of thyro-fissure is thoroughly to remove the growth with as little destruction of the larynx as will, so far as possible, ensure complete eradication of the disease, while at the same time leaving the patient with a serviceable voice. Since the removal of a large portion of the healthy cartilaginous framework may lead to narrowing and possibly stenosis of the larynx, with consequent impairment of voice, and this is admitted by Lack, it should be our main endeavour to save rather than destroy, compatible with safety, the healthy surrounding parts.

Improvements in technique, consequent on the introduction of more suitable and efficient instruments, have resulted in these difficulties being overcome. The operation of laryngo-fissure as now carried out is greatly simplified, the more thorough removal of the disease can be more easily assured, and the risk to life from so-called recurrence, which usually implies imperfect removal, reduced to a minimum.

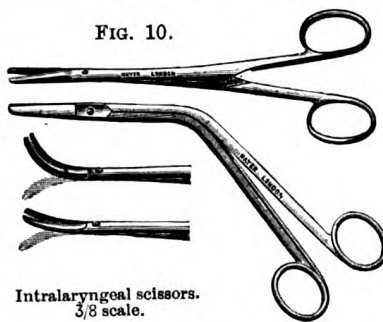
The illustrations were drawn for me by Mr. Thornton Shields from special dissections prepared to show the steps of the operation and the advantage of the instruments employed. The instruments are made to my design by Messrs. Mayer and Meltzer, of Great Portland-street, W. The retractor and clamp forceps were originally made for me by Mr. Lewis, of Westmoreland-street, W.

FIG. 9.



Angular intralaryngeal forceps. 3/8 scale.

FIG. 10.



Intralaryngeal scissors. 3/8 scale.

THE LATE SEQUELÆ OF FRAMBOESIA.

By PHILIP HARPER, M.R.C.S., L.R.C.P. LOND.,
DISTRICT MEDICAL OFFICER, RA PROVINCE, FIJI.

Locomotor ataxy, general paralysis of the insane, and aneurysm, well recognised as sequelæ of syphilis, seem to have been generally overlooked as remote results of frambœsia.¹ Reference to Allbutt's "System of Medicine," Castellani's "Manual of Tropical Medicine," and the "Encyclopædia Britannica" fails to find any mention of this relationship. Amongst Fijians syphilis does not at present exist, whilst frambœsia is universal.² We can be sure that the disease which is universal to Fijians is yaws and not syphilis, because of (1) its symptomatology and physical signs, which are different from those of syphilis; (2) the fact that the disease is not hereditary; (3) the therapeutic tests; and (4) the fact that there is not a single absolutely certain case of primary syphilis in a Fijian nor of any hereditary syphilitic manifestations in Fijian infants.

The following are a number of cases of tabes and general paralysis of the insane occurring in one district medical officer's routine practice in a district of 6000 Fijians. Several other but less clear cases were seen. Aneurysm is so common in Fijians, both male and female, that I have not included any accounts here, but it may be of interest to note that my first post-mortem examination in Fiji was on a middle-aged Fijian native minister who died suddenly from an aneurysm that had burst into his pericardium.

With regard to the cases that follow it may fairly be said that the Fijian is a difficult subject to examine for nervous disease, partly owing to the prevalence of physical conditions which are unusual among Europeans. For instance, trachoma, or a disease very similar to it, too often prevents the pupils being seen, whilst the enormously thickened horny sole of a Fijian's foot renders the plantar reflex unobtainable.

CASE 967/15 (tabes).—Vereti, a male Fijian aged 29 years, from the town of Yanuyia, Nadroga province, came to see me on Oct. 26th, 1915, complaining of complete blindness in the right eye and of increasing blindness in the left eye. His illness, he said, had started a year before with fever and headache, and nine months ago he was aware that his sight was definitely going. This had steadily got worse up to the date of his consulting me. He said there was nothing else wrong with him. On examination the urine was normal. His gait was a typical high-stepping motion with a broad base and with a violent stamping down of the heel. There was marked incoördination on standing with eyes closed and feet together. He was unable to stand on one leg. The knee-jerks were absent. After lengthy testing the left pupil was thought to react very sluggishly and very slightly both to light and accommodation. The media of the eye were clear and the discs easily seen.

CASE 478/16 (general paralysis of the insane).—Solomoni, a male Fijian aged 30 years, from Naqiki town, Nasavusavu province, came complaining of pains in the abdomen and legs. The knee-jerks were increased; there was considerable muscular incoördination; the right pupil was large and the left small, neither reacting to light but both reacting to accommodation.

CASE 1047/15 (tabes).—Orea, a male adult Fijian from Masimasi town, Tai Levu province, had double optic atrophy, absence of knee-jerks, inability to stand on one leg. The pupils were small; there was, of course, no reaction to light, but on being told to look into the distance it was considered that the right pupil was enlarged.

CASE 48/16 (tabes).—Paula, male adult Fijian from Vaidoko town, Ra province, had double optic atrophy, absence of knee-jerks, and the left pupil was irregular and smaller than the right. There was no pupillary movement to light or accommodation.

CASE 465/15 (general paralysis of the insane).—Taniela, a male middle-aged Fijian of Naukuloa town, Ra province, came to see me on June 4th, 1915, saying that ten years ago he had been in hospital for backache. He remained in hospital for many months without improvement and then left the hospital and, as he said, recovered. His present illness was described as having started three months before his visit to me with tremor of the fingers and tremulous,

¹ H. A. A. Nicholls (Dominica, W.I.): "In yaws there are no lesions of the nervous system, as in syphilis."—*Twentieth Century Practice*, London, 1899, vol. xvi., p. 332.

² Manson: "Against its [yaws] being syphilis is the practical absence of syphilis among the natives of Fiji, where this form of ulceration is particularly common."—*Tropical Diseases*, fourth edition, London, 1907, p. 576.

⁹ See THE LANCET, 1896, vol. i., p. 1638. Partial Excision of the Thyroid Cartilage as an Alternative to Thyrotomy in Malignant Disease of the Vocal Cords, Proc. Roy. Soc. Med., Laryngol. Sect., 1916, vol. ix., p. 62. Partial Resection or Window Resection of the Larynx for Intrinsic Malignant Disease, Journ. of Laryngol., 1916, vol. xxxi., pp. 121-128.

rather inarticulate, speech. His relatives volunteered the information that he was getting thin and weak, whereas he had previously been an unusually powerful man, and that his disposition had completely changed. He had been an exceptionally trustworthy, well-behaved, Government official of a very religious turn of mind. His disposition was said to be now quite the opposite. On examination speech was found to be tremulous and rather explosive. Although he used to be a lay reader, now when told to say the Lord's Prayer his articulation became quite unintelligible at the Fijian equivalent of "Hallowed be Thy name." The knee-jerks were very much increased; there was a tremor of the fingers which prevented the patient from picking up a pin. He was under my care for three months, during which time his mental condition got rapidly worse. Towards the end of this time his mental condition is shown by the fact that he told me that he was a harbour master (a high office in Fiji), and on another occasion that he was a big landowner and would give me certain very valuable lands which, as a matter of fact, are now owned and worked by Europeans. There was no basis of truth in his statement that he was a harbour master or a landowner. He then one day went to the house of a native medical practitioner during the absence of the latter, and exposed himself indecently to the native doctor's wife and made indecent suggestions to her. He was then sent to the Suva Lunatic Asylum, where he now remains. During the regrettable occurrence which led to his detention in the Suva Lunatic Asylum he was supposed to be in the charge of his brother, named Tiacoro, whose case will be next described.

CASE 678.16 (general paralysis of the insane).—Tiacoro, a middle-aged male Fijian of Nanukuloa town, Ra province, came to see me on August 5th, 1916, with the history that until four months previously he was quite well. At that time he went to see Taniela (the patient in the previous case) at the lunatic asylum. Whilst in Suva he had, he says, filarial fever (he is subject to attacks of filarial fever and has elephantiasis of arm, leg, and scrotum). He was in Suva only a week or two on this occasion, and on returning to Ra he was weak and depressed. This weakness increased, until on August 3rd he was discovered by a native medical practitioner, Tomasi Mawi, at 3 A.M. wandering away in the bush "looking for Taniela," as he said. On examination he was found to be very much thinner than he was last year when I examined him. His face was bloated and expressionless, a great change from his alert, vivacious expression of a year ago. Articulation was hesitating and difficult, but correct. He had a fine tremor of his fingers, which made him very clumsy. The knee-jerks were very much increased: the pupils were small, equal, and sluggish in their reaction to accommodation and there was absolutely no reaction to light. The sight was not affected.

It will follow from the above cases that there is a very high rate of such nervous disease amongst the Fijians, but it must be remembered that the whole Fijian population has been infected with yaws, and probably the case-rate following yaws might not greatly differ from the case-rate following syphilis.

Fiji.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

WOUND OF THE PORTAL VEIN; OPERATION; DEATH NINE DAYS LATER.

BY W. H. C. ROMANIS, M.B. CANTAB., F.R.C.S. ENG.,
TEMPORARY LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

THE following case of shell wound of the abdomen, which was treated in a casualty clearing station, may be of interest not only on account of the actual injuries caused but also as an instance of a shell fragment passing through the abdomen from front to back without injuring any portion of the intestinal canal.

An Australian soldier was wounded by high-explosive shell at 4 A.M. on July 5th, the fragment entering just below the left costal margin, one inch to the left of the ensiform cartilage. When first seen late the same evening the patient's condition was bad; he was pale and cold, with a thready pulse of 120, vomiting was marked and the abdomen was very rigid all over, tenderness being especially marked in the epigastric region. Under chloroform a laparotomy was performed through the left rectus at 3 A.M. on the 6th, 23 hours after the wound, and the abdomen was found to contain a large quantity of fresh

blood. A track was traced down and to the right through the left lobe of the liver, emerging on its under surface, passing through the lesser omentum and tearing a lateral hole about half an inch long in the portal vein, from which blood was gushing freely. A plug was placed in the liver wound and two artery forceps were clamped on the side of the vein in a longitudinal direction, thus controlling the hæmorrhage. The track of the missile was then seen to pass on just to the outer side of the second part of the duodenum and to pierce the peritoneum of the posterior abdominal wall here. Owing to the condition of the patient the fragment was followed no farther, and a rapid examination of the stomach, small intestine, and transverse colon discovered no perforation. The blood was then mopped out and the wound closed in three layers in the usual way, the plug and artery forceps being left *in situ* with their handles emerging from the upper end of the incision, half an inch of which was left unsutured for that purpose. Next day the patient was much better, with no vomiting, and he continued to improve for several days; the plug was removed on the second day and the artery forceps taken off on the third day without any difficulty. Improvement continued till the eighth day, when the patient was doing well and eating solid food, his bowels being opened naturally each day. On the evening of the eighth day, however, he suddenly complained of severe hypogastric pain, vomited twice, and passed some urine with much blood in it. His abdomen remained quite soft and mobile, but his pulse failed and he died in an hour.

Post mortem there was no peritonitis, no adhesions, and no perforation of the intestinal tract. The lumen of the portal vein was patent, the wound in it being represented by a sound scar, and the liver substance appeared quite normal. A large retroperitoneal hæmorrhage was present round the right kidney, and on dissecting out the right renal artery an ulcerated hole half an inch long was found on its posterior aspect, close to which there lay a small jagged piece of shell-case, a little larger than a green pea. The patient thus apparently died from secondary hæmorrhage from the renal artery on the eighth day.

Several other instances have been recorded in the present war of cases in which artery forceps have temporarily been left on the large veins of the abdomen, and the above case is only published as one of an uncommon class.

CASE OF TONSILLITIS WITH HÆMORRHAGIC ADENITIS.

BY C. FREDERICK STRANGE, M.R.C.S.,
L.R.C.P. LOND.,

TEMPORARY CAPTAIN, R.A.M.C.; EMERGENCY SURGEON, CONNAUGHT HOSPITAL, ALDERSHOT.

IN the following case of tonsillitis the unusual complication of hæmorrhagic adenitis occurred.

The patient, aged 22, of good physique, R.A.M.C. orderly, was admitted to the Connaught Hospital, Aldershot, on June 27th, 1916, with acute tonsillitis. He had had an attack of tonsillitis last year when at Malta, but never any other illness. His present attack, which commenced the day before admission, came on suddenly while on parade with shivering and chilliness, headache, and sore-throat. The headache was so severe as to prevent sleep. On admission he complained principally of sore-throat. On examination the pharynx was red and inflamed, but there was no swelling of the tonsil and no follicles. Temperature 102° to 103.6° F.

On June 29th our medical specialist, Captain A. Abrahams, asked me to see the patient with a view to surgical interference, as during the past two days a large swelling on the right side of the neck had appeared. I considered this advisable, and the patient was transferred to a surgical ward. Temperature 103°, pulse rapid, respiration not affected. The patient looked very ill indeed. A large glandular swelling occupied the whole of the anterior superior triangle of the neck on the right side, extending from the angle of the jaw to beyond the posterior border of the sterno-mastoid. The swelling was very painful and tender to the touch. There was no fluctuation nor pitting of the skin on pressure. The right tonsil was much enlarged, covered with follicles, red and tender. He could only swallow liquid food with difficulty.

Operation on June 30th under general anaesthesia. An incision 2 inches long was made over the most prominent part of the swelling and a large gland (the size of a pigeon's egg) was exposed. The gland was steadied with forceps and an incision made through the whole of its substance. I had thought that perhaps there might be a gland commencing to break down with pus formation at the centre, but no pus was present. Countless minute hæmorrhages had taken place into all the substance of the gland and the enlargement was entirely due to these hæmorrhages. The gland was left alone. The lower part of the wound was closed with

silkworm-gut sutures, the upper part being left open. No drainage-tube was inserted, the wound being dressed with sterile gauze.

The immediate effects of the operation were most striking. The next day the temperature had fallen to normal, and remained normal till the patient's discharge from hospital. His general condition underwent a sudden transformation. A day previously he was obviously very ill, his facies resembling that of an acute abdominal condition. He could take no food and did not want any. The next day his face was bright and smiling, he had no ill feeling, and his appetite rapidly returned. The wound healed without any suppuration; it was dressed daily with dry sterile gauze, no lotions being applied. The swelling of the neck rapidly disappeared, as also that of the right tonsil, and the follicular condition healed rapidly. In a fortnight the wound was healed, the swelling gone, the throat normal, and the patient was discharged fit for duty.

I am much indebted to Colonel W. Turner, officer in charge, Connaught Hospital, Aldershot, for his permission to publish the above.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

John Ward and His Diary.

THE proceedings of this society were reopened on Oct. 9th, by Lieutenant-Colonel D'ARCY POWER, the President, who read a paper entitled "John Ward and His Diary."

The diary, which consists of 16 volumes of manuscript, and the writing of which was cramped, smudged, and very difficult to decipher, had not hitherto received the study it merited. It was not written in diary form, but contained an irregularly arranged collection of notes, extracts, anecdotes, and observations, which threw much light on the manners of the period and on the lives of individuals otherwise known only by names. Its author, the Rev. John Ward, who was born in 1629, and died in 1681, was in residence at Oxford in the stirring times before the Restoration. He was thus a contemporary with the founders of the Royal Society, and his diary gives an insight into university life at a time when a new interest was being taken in natural science. He left Oxford in 1660, probably because of the changed order of things which followed on the Restoration, and at first seemed to be in doubt as to selecting his profession, whether to choose that of medicine or the Church, for he took Holy Orders and at the same time attended lectures on anatomy in London. Finally he became vicar of Stratford-on-Avon. The paper is given in full in the present issue of THE LANCET.

MEDICO-PSYCHOLOGICAL ASSOCIATION.

"Séguin and his Work."

A MEETING of the South-Eastern branch of this association was held at the Medical Society's rooms on Oct. 4th, the chair being occupied by Dr. DAVID BOWER.

Dr. G. E. SHUTTLEWORTH read an interesting paper on "Séguin and his Work." He considered that Séguin, with whom he had been personally acquainted, could be designated the pioneer in the training of backward children and in the advocacy of the educational principles which were essential to their development. That master anticipated many of the modern methods which had since been accepted by the educational world as recent discoveries: his acute foresight placed him in advance of his times, for his contentions were derided by the educationists of his day. When only 27 years of age he opened a school for idiots in Paris, the first of its kind of which there was any record. It became a success, and later formed the model for similar institutions in Switzerland, Germany, America, and this country. The French Government issued a very favourable report on his work. In 1866 appeared his book entitled "Idiocy and its Treatment by the Physiological Method." In this he claims that his methods were also applicable to ordinary children. Man being primarily an animal, the predominant means of education must be through his animal activity and virility and through his senses. To attain to his best in higher spheres he must also be the best sort of animal possible—i.e., all the physical functions must be cultivated.

Attention must be devoted to the physiological development of the senses before any effort is made to educate the mind, experience, not memory, being the mother of ideas. Séguin was also a great advocate of open-air schools, an idea he developed a great deal in New York; and he devised finger-drill and sensorial exercises, which had been modified and perpetuated by Madame Montessori. Séguin laid great stress on gaining the child's confidence and love, and was a great believer in religion and other spiritual agencies, his teaching appearing to centre around the precept: "To make the child feel that he is loved, and to make him eager to love in his turn, is the end of our teaching, as it has been the beginning."

Dr. R. ARMSTRONG-JONES, in discussing the paper, agreed as to the great power of spiritual influences in the education of defectives, and he had often been agreeably surprised at the success which a chaplain attained by means of the singing of hymns and simple religious precepts, and this special branch of medicine was much indebted to Séguin, who pointed out its value.

Dr. A. HUME GRIFFITH (Lingfield) spoke of the great help which Séguin's teaching had proved in a colony of epileptic children with which he was connected, where open-air schools were extraordinarily beneficial. The endeavour to give the pupils ambidexterity had produced a greatly improved general mentality. In this work, which required infinite love, tact, and patience, religious teaching produced a remarkably good effect.

Dr. BOWER, Sir GEORGE SAVAGE, and Dr. FLETCHER BEACH also spoke, and Dr. SHUTTLEWORTH replied.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—

An ordinary meeting of this society was held on Oct. 6th at the society's rooms.—The retiring President, Dr. Leonard Dobson, inducted his successor, Dr. Arthur Saunders.—The new President presented to Dr. Dobson the Keetley medal, and congratulated him on the success of his year of office. Dr. Saunders then delivered his Presidential address on "Some Aspects of the Throat and Naso-pharynx in their Relation to General Medicine." After recapitulating the chief varieties of naso-pharyngeal infections, he dwelt particularly on modern bacteriological developments as aids to diagnosis, and discussed at length the treatment of tonsils and adenoids and their bearing, when diseased, on other organs and on the general condition.—A vote of thanks, proposed by Dr. A. J. Rice Oxley and seconded by Dr. G. B. Shuter, was carried unanimously. There was a large attendance of members and visitors.

Reviews and Notices of Books.

Elements of Folk Psychology: Outlines of a Psychological History of the Development of Mankind.

By WILHELM WUNDT. Authorised translation by EDWARD LEROY SCHAUB, Professor of Philosophy in Northwestern University. London: George Allen and Unwin, Limited; New York: The Macmillan Company. 1916. Pp. 532. Price 15s. net.

Professor Wilhelm Wundt, professor of psychology in the University of Leipzig, is one of the greatest contemporary masters of his subject, and has been responsible for more activity in the prosecution of psychological study on its philosophical side than any other modern teacher. His industry and his range of accomplishments are alike wonderful, and these outlines of a psychological history of the development of mankind display the solid learning which lies behind what is stated by the author to be a sketch.

The subject of folk psychology is dealt with in this book in four sections. The first, which has relation to primitive man, includes a discussion of the organisation of man into society, and in it we have described the beginnings of language and of art and the earliest beliefs in magic and demons. It is in the indefinite concepts of religion, which fall under the head of demon worship, that the earliest rising of the medical idea took place, the original duties of the medical man (commonly, of course, also the magic man or the priest) being to provide charms to ward off the sickness inflicted by evil spirits. The second section of the

book deals with what Professor Wundt calls the totemic age, and we have read no better introduction to the study of such difficult subjects as totemic culture, the origins of exogamy, the various systems of polygamy, the laws of taboo, and the origin of the fetish cult and of ancestor worship. Those who have read Sir George Frazer's monumental "Golden Bough" well know how extremely difficult it is to form any definite opinion on such matters, for example, as totemism and exogamy. What evidence can be collected, or what can withstand criticism, supports no one theory, and we are left to gather from Professor Wundt that a good deal of research may be required to assist our advances. In the third section we are at the age of heroes and gods. We have reached a period when the family has become organised, when classes have become differentiated, when the ideas of a legal system have become expressed in penal laws, and when states have been founded and ruled according to definite principles. The last section is entitled "Development to Humanity," and the author's views on world empires, world culture, and world religion are wise, dispassionate, and at variance with those which have been put forward in recent years by some of his prominent countrymen.

Professor Wundt, in this elementary though learned treatise, has studied the phenomena of his subject so far as possible synthetically, accepting the common conditions and their reciprocal relations. But in doing this, he points out that he has not given the various facts a proportionate degree of attention for reasons which are absolutely sound. In the case of the better known phenomena it has been found sufficient to sketch their place in the general development, while when dealing with those which are less familiar more detailed discussion is required. Hence the forms of original tribal organisation and of the consummation of marriage, demon and totem cults, and various features of primitive culture are dealt with at some length, while the social movements that reach over into historical times, such as the founding of states and cities, the origin of legal systems, and the like, are described in outline only. We recommend the book cordially to our readers.

Collected Papers on Analytical Psychology.

By O. G. JUNG, M.D., LL.D., formerly of the University of Zürich. Authorised translation edited by CONSTANCE E. LONG, M.D. BRUX. With 14 figures. London: Baillière, Tindall, and Cox. 1916. Pp. 410. Price 12s. 6d. net.

THESE papers are a misnamed medley of nebulous dreamings. They do not treat of psychology, nor are they analytical. Any careful reader of the preface to the book will certainly agree with the author that there is "no scientific justification" for the procedure of the Zürich School of Psycho-analysis, of which he is father and prophet. Dr. Jung argues that since present-day science is based as a whole upon causality, the study of psychology "cannot be exhausted by causal methods only, because the mind lives by aims as well." He paraphrases this odd dictum by saying that "the method of the Zürich school is not only analytical and causal, but also synthetic and prospective, in recognition that the human mind is characterised by *causæ* and also by *fines*." (It is difficult to see any extra light from the employment of Latin terms.) He, moreover, uses the word "Psychology" as identical in content with the *psycho-analysis* now in vogue with a certain group of psychiatrists or mind-healers, for he proceeds to say that there are "two types of psychology, the one (the Freudian) following the principle of hedonism, the other following the principle of power. Scientific materialism is pertinent to the former type, the philosophy of Nietzsche to the latter"

In further justification, or attempt at explanation, of one of his main objects, which is to show why he differs from Freud's teaching, the author tells his readers that there is "a vital necessity" for his hypothesis because it is impossible to live according to the intimations of infantile hedonism (as implied in Freudism); and he contends that if Freud's conception is to be retained, it must be taken symbolically! "Symbols," he says, "are necessary for the moral education of mankind. 'Concrete values' cannot take their place. The further development of mankind can only be brought about by means of symbols which represent something far in advance of himself, and whose intellectual meanings cannot yet be grasped entirely. The individual

unconscious produces such symbols and they are of the greatest possible value in the moral development of the personality."

The preface ends thus:—"This brief résumé may show what the reader cannot find in this collection of papers. The essays are stations on the way of the more general views developed above." It appears to us that this pregnant preface, as well as the editor's preface, which should not be passed over, very clearly shows what any reader would certainly find in the papers; and might even aid him materially in his decision as to reading further. He would find, as the present writer, who has studied them all, has found, many bare assumptions and arguments based on deductions untested by any critical appeal to further relevant observations. Psychology (the study of which to all except the present-day psycho-analysts who are disciples either of Dr. Freud or Dr. Jung, means an effort to explain the phenomena of consciousness) seems to mean, at least to Dr. Jung, the study of what he calls "the unconscious"—a term which is spelt with a capital "U" by many psycho-analysts, including the editor of the volume before us. This "unconscious" he defines as the sum of all those psychological events which are not apperceived, and so are unconscious! To this purely hypothetical entity, intruding into a person's "consciousness," he attributes the "neuroses" generally, which result, according to the new "psychology," from internal battles between the two powers. And on grounds such as these he builds up his "constructive" theory and founds his practice, which, in spite of his contentions, is much the same as that of all who call themselves "psycho-analysts," of whatever school they may be. In practice psycho-analysis seems to consist in a search for what is called the individual patient's "libido," which, although interpreted by Dr. Jung or his followers as "the instinctive psychological effort," the "élan vital," the "joy of living," or the "fundamental interest of the individual," is found by the practitioner to be in nearly all, if not all, cases, as in the instances cited in these papers, reducible to sexual desire.

Now it need not be argued that the influence of the sexual system on the organism has long been recognised as playing a very important part in the development of so-called neurotic disturbances, especially in civilised or highly socialised humans necessarily subject to economical and moral restraints; nor, indeed, is this fact ignored by any careful medical observer whose task it is to investigate and treat cases of mental or nervous disorder. But it is certainly not true that all cases of nervous disorder, called "functional" because the physician would not expect to find any actually demonstrable morbid condition of the nervous system if he could observe it in its working, are in any sense, however subtle, reducible to sexual disturbance, recognised or unrecognised by the patient. And with regard to such cases as may be correctly referable to unrecognised or imperfectly remembered physiological impressions affecting the sexual system, there is surely no light thrown on them by hypothesising the chimera of Unconscious Mind, and imagining an unconscious *mental* process conflicting with consciousness. Dr. Jung appears to be a spiritualist who will have no truck with those who speak of brain action apart from consciousness. He ridicules indeed, and deems as antiquated, the very notion that delusions and other mental disturbances can be provoked by morbid processes of any kind in the brain cells, arguing that such disorders occur in "certain functional disturbances," and even in normal people! "To seek to ascribe," he says, "symptoms of that nature directly to disease of the brain cells I hold to be superficial and unwarranted." This is surely a striking example of the confessedly unscientific attitude of the author; and justifies a strong suspicion that his knowledge or his memory of the facts of cerebral physiology and pathology is sadly inadequate.

To sum up, this book alone should go far towards proving to doubting readers that the theory of present-day "psycho-analysis" as set forth even by the anti-Freudian school, is the offspring of mysticism and unbridled phantasy, and that its practice, to say the least, is calculated to be very dangerous. The perusal of Chapter IX., on "Some Crucial Points in Psycho-analysis," should not be omitted by those who wish to form their own judgment on this conclusion. The editor and translator of this book, however, in calling attention to its issue in the second year

of the great European War, says: "We need a new philosophy of life to take the place of that which has perished in the general cataclysm, and it is because I see in the analytical psychology which grows out of a scientific study of the Unconscious the germs of a new construction that I have gathered the following essays together." Surely this disciple claims more than her master in pronouncing these papers to be "scientific."

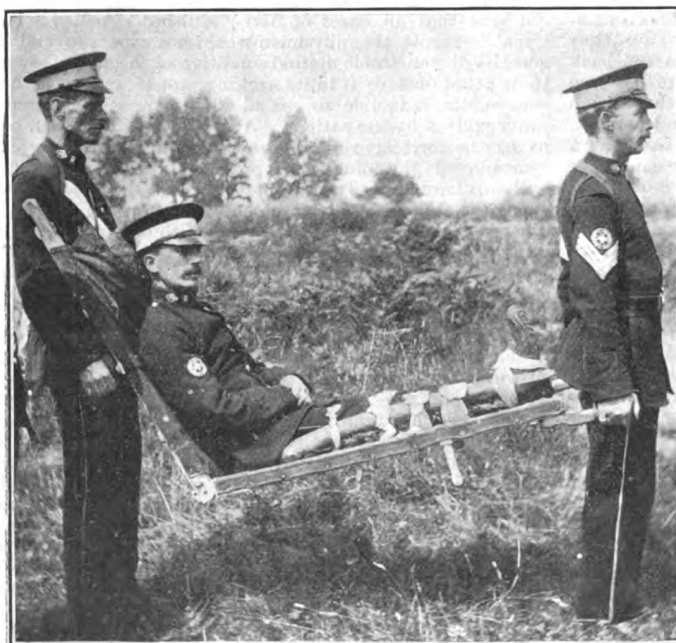
New Inventions.

A STRETCHER FOR TRENCH USE.

THIS stretcher has been devised so that angles may be negotiated with the minimum of discomfort to the wounded man when being removed from the trenches. The stretcher when open, prepared for a patient lying full length, is the same width as the Furley stretcher with canvas bed of the same length (St. John Ambulance Association pattern). The importance of keeping fractured lower limbs perfectly at rest in the horizontal position will be acknowledged, but it is not possible to carry a full-length stretcher horizontally through narrow trenches with sharp turns. By flexing this stretcher at the point shown, the trunk only of a patient is disturbed and trench traverses can be negotiated without discomfort. The stretcher has been successfully carried along a trench with a minimum width of 26 inches and a maximum of 42 inches with a number of traverses at various angles. With the traverse bars slightly collapsed it will pass through a trench 21 inches wide. Once clear of sharp angles the stretcher may be restored to the horizontal position in a moment and can then be carried in the usual way.

The stretcher has obvious uses apart from trench warfare wherever narrow staircases, corridors, or sharp turns are met with. The poles are of ash, 7 ft. 1 in. long, and each is provided with a hinge about the centre of its length. The hinge is of an aluminium alloy, and is so designed that it can be held securely and rigidly by a steel pin when in a horizontal position or when flexed at a definite angle. The foot ends of the poles are provided with handles which can be

FIG. 1.



The patient is sitting on the stretcher, the head end of which has been raised, and he is bandaged for a fracture of the leg. The back is held rigidly in position by steel pins. The length of the stretcher in this position is 5 ft. 6½ in. over all. The patient is being lifted by bearers wearing Cantile pattern slings to distribute the weight over their shoulders. The bearer at head is grasping the runners. It will be observed that the canvas does not sag under the patient.

FIG. 2.



Shows the stretcher and patient in the same position as in Fig. 1, being carried along a narrow trench. The bearer at the foot-end of the stretcher is standing aside, the handles being turned inwards, when the over-all length of the stretcher is 5 ft.

used in the ordinary manner or can be folded inwards parallel with the end of the canvas and permit a bearer to grip them around the traverse when he is facing the patient's feet, thus shortening the stretcher and protecting the bearer's knuckles from the trench sides. There are three traverse bars of St. John Ambulance Association pattern. One is at the foot end in the position usual on a Furley; one is a few inches from the hinge towards the head, and the third about midway between this and the head end of the poles. This type of traverse has been adopted, as it has no tendency to loosen and thus collapse the canvas.

The runners are of aluminium of pedestal pattern, each fitted with a small wooden roller, and are so shaped that they are comfortable to the hand when grasped as handles. In order to obtain great rigidity when thus used the head of each runner encircles the pole and is driven on and screwed fast.

The weight of the stretcher is 19½ lb.—several pounds lighter than the Furley or the R.A.M.C. stretcher. It has successfully withstood severe tests of its strength in both positions.

The stretcher has been produced by Mr. H. Langley Jones, 25, Ailsa-road, West-cliff, at the suggestion of the Rev. H. C. Hutchings, who was then acting as a stretcher-bearer in France, and of Messrs. G. Davenport and Co., Limited, and has been made by Messrs. R. Hoe and Co., Limited, London.

THE LANCET.

LONDON: SATURDAY, OCTOBER 14, 1916.

The Examination of Recruits for Affections of the Heart.

ONE of the most difficult problems in connexion with the examination of recruits is the exact estimation of the condition of the heart. If the heart is of the normal size, the sounds clear, and the rhythm regular, a satisfactory conclusion can be arrived at promptly; but if a murmur is heard, or there is irregularity of the beat, then skill and experience are required in order to distinguish between functional and organic conditions. The main point is to estimate, if possible, the amount of cardiac reserve power; but this is not the only matter for consideration, and, quite rightly, cases in which doubt arises are now referred to experts for opinion.

Since last February, by the direction of the Medical Department of the War Office, recruits in the London district whose rejection was contemplated on account of the state of their heart have been sent to the National Hospital for Diseases of the Heart for examination and report. As up to now over 4000 cases have been dealt with, it will be of interest to explain the general idea underlying the scheme. All recruits are seen in the first instance by a recruiting Medical Board, and those whose hearts are manifestly defective, as shown by the ordinary methods of clinical examination, are rejected or placed in the categories for which they are suitable, while those with obviously healthy hearts are passed. It is only when real doubt arises as to whether a recruit's heart is defective, or how far an observed defect is likely to impair efficiency for military purposes, that the man is sent to the Heart Hospital and subjected to a searching examination with the aid of instrumental appliances, which could not possibly be available for employment by the recruiting boards without the assistance of some such institution. After consideration of the various points and consultation with recognised authorities, a scheme of examination was decided upon at the Heart Hospital which experience has shown to be very efficient in elucidating the problems which present themselves. Every recruit is asked to state what, if anything, he complains of, and a record is made of this, together with a detailed history of his previous diseases and habits. Any subjective symptoms which may be present are inquired into in detail and recorded. He is then given a standard piece of work to do, the pulse, respiration, and blood pressure being recorded before, immediately after, and three minutes after. The urine is analysed, and an electrocardiogram is taken. In a very large proportion of the cases the

heart and chest are also examined by the X rays. Furnished with these data, the physicians proceed to make a thorough clinical investigation under the usual heads of inspection, palpation, percussion, and auscultation. A diagnosis is arrived at, after taking into consideration all the evidence, and an opinion is expressed as to which category of military service, so far as his heart is concerned, the recruit is to be placed under. Here the most practical point for consideration is that, although a man with a slight cardiac lesion may support well the strains of civil life, when he can stop work at will, he may not be found suitable for military service, in which he must "carry on" or become a casualty. A copy of the paper containing all the data, as well as the diagnosis and opinion, is transmitted to the Medical Board sending the recruit, with whom, of course, the final decision rests.

That the practised medical examiners who constitute the recruiting boards of London should have felt the desirability of having as many as between 4000 and 5000 cases examined in this detailed manner before arriving at a decision is perhaps one of the most striking pieces of evidence that could be adduced of the progress that this department of medicine has made during the last few years, and of the importance attached to the modern instrumental aids to diagnosis. Of 1000 cases examined 447 have been classified as fit for full military service either at home or abroad, 291 as fit for garrison duty or labour purposes, and 262 as fit only for clerical work or totally rejected. These figures are of high significance; they tend to show that many men who at the first examination did not seem fitted for military service, on further investigation were passed for some form of military work, the proportion that were classified as fit for full service being high.

A Campaign against Adult Mortality.

Dr. CHARLES F. BOLDUAN, Director of the Bureau of Public Health Education in New York, has recently stated¹ that most of the health work of late years has been directed to the saving of infant and child lives, while practically nothing has been done to prolong adult life. He illustrates this statement by a comparison of the New York life-tables of the two triennia 1879-81 and 1909-11. The comparison shows that whereas in New York the expectation of life at birth is now about ten years greater than it was a quarter of a century ago, the adult of 40 years or over has actually a shorter expectation than formerly, the decrease amounting to a year or more, according to the exact age-period. Dr. BOLDUAN finds that this condition is not confined to New York City, but applies also to the whole of the United States registration area. The death-rate per 1000 at the age-period 45 to 54 has increased by nearly 2 per cent. during the last ten years, and

¹ Monthly Bulletin of the Department of Health of the City of New York, vol. vi., No. 4.

at the next older decennium by nearly 7 per cent. He regards the solution of the problem as a matter of the greatest importance, middle age being the period at which the addition of years of life would be of most value to the race. Similar considerations have evidently weighed in the appointment by the Department of Trade and Customs of the Commonwealth of Australia of a committee appointed to inquire into the causes of death and invalidity in the Commonwealth and have resulted in a special report, which has just appeared on the risks of middle age² and on the chances which cut off thousands of people in their full maturity.

The causes of the risks of middle age are carefully discussed by the Australian Committee, and in a single paragraph they give without hesitation an answer to the question as to their origin. Everything, they say, which involves overstrain, everything which favours chronic poisoning of the blood with alimentary toxins or with products of tissue change, everything which encourages infection of the blood from bowel or throat must count among the causes of excessive blood tension. And in high blood tension they see the principal risk of middle age. Put shortly, accumulating wastes and unreasonable strain are the determining factors. The report draws a picture of the man who has had an active school career, with devotion to athletics, followed by a hard struggle for success in some handicraft or profession, who still taxes to the utmost his nerve and muscle, who still pursues, it may be, some vigorous athletic sport, and who takes food rapidly and in large quantity, with soup and meat forming a substantial part of his diet. The picture is one not unfamiliar in the mother country. The report goes on to call attention to the high rate of death from apoplexy as well as from pneumonia and pericarditis, which are in Australia very deadly for patients with high tension. The dangers of the period of failing tension are dwelt upon, when the persistent strain has much tried the heart, and when, if the patient is not carried off by apoplexy or some intercurrent inflammation or infection, signs of heart failure become dominant. In hospital practice in Australia at least two-thirds of the deaths attributed to organic heart disease are considered a sequel of raised tension. Due credit is given in the report to the effects of alcohol, syphilis, and gout as adjuvant causes of the risks of middle age, but stress and diet are allotted their place as the primary agents. Dr. BOLDUAN, out of a wide familiarity with the conditions in the United States, deals with the same etiological factors. The rush of modern city life has been credited, especially in America, with the increased death-rate from cardiac and arterial disease, but he finds that the rural districts show precisely the same tendency. Exposure, strain, and occupational injury are factors which are common to all classes and countries, and while alcohol, syphilis, and other chronic poisonings must take their share of the blame, stress and

over-eating, especially over-eating of protein, are those on which in America, as in Australia, suspicion rests most heavily.

To combat this high adult mortality, Dr. BOLDUAN suggests an organised campaign, and he gives an outline of a plan of education for the control of diseases of the heart, kidneys, and arteries. At the outset he thinks nothing would be more effective than a large exhibition of adult hygiene on the lines of an exhibition held at Dresden a few years ago. He would keep public opinion aroused by constantly reiterating the statement in the press and elsewhere that persons over 40 do not live as long as they did 30 years ago—an assumption on which vital statistics should have some critical things to say. He would organise boards of sanitary control to watch over the health of employees, putting the responsibility for the sanitary conditions of any industry upon the industry itself. He points to the good example of the New York Department of Health, which has placed the services of a highly trained medical examiner at the call of all its employees. A complete medical examination can be obtained by them free of charge, and the information turned to good purpose in detecting the onset of degenerative disease at the earliest stage, when treatment is still hopeful of result. In the next rank of importance he places an extension of work directed against the venereal diseases. The Australian Committee begins further back with its proposals, and suggests an extension of the medical inspection of schools, and an increase of school instruction in personal hygiene. This is to be followed by an inquiry into the undue prevalence of high tension in certain occupations and by the provision of facilities for the early diagnosis and treatment of high tension. The Australian Committee proposes concretely that provision be made for industrial workers not to return to arduous work after serious illness until time has been allowed for proper convalescence; and that some system of oversight of the health of industrial workers should be instituted, correlated with the provision, when necessary, of temporary relief by some scheme of insurance. These proposals are in a line with those recently made by Professor W. J. ASHLEY in an introductory address at Birmingham University.

The evils alluded to in both the reports are very wide, and the remedies suggested, though comprehensive, seem somewhat vague. But the idea of a campaign against avoidable adult mortality is one which has much to commend itself to thoughtful people; and it need not become an opportunity for the exhibition of rampant faddiness, though risk lies in this direction. The further development of the schemes will be watched in this country with keen interest by our medical men, sanitarians, and statisticians.

FATAL CASE OF ANTHRAX.—At an inquest held at Mossley, Yorkshire, on Oct. 4th, on a Congregational minister of that town it was stated that deceased had purchased a shaving brush while on a holiday at Blackpool and the medical evidence showed that anthrax was due to the use of this brush.

² Printed and published for the Government of the Commonwealth of Australia by Albert J. Mullett, Government printer for the State of Victoria. No. 236. F. 6226.

Annotations.

"No quid nimis."

A CURVE OF WORKING EFFICIENCY.

MOST of us are aware that we do not begin our work in the morning at full efficiency, and that some time may elapse after the commencement of the working day before the maximum speed of output is reached. At the end of the working period a corresponding tailing off may be less readily observed. Exact observations on this interesting subject have been made by Dr. H. M. Vernon in regard to the output at munition works, and published as an appendix to Memorandum No. 5 by the Health of Munition Workers Committee. In works where the motive power is electric, and the amount supplied to each section is registered by a separate watt-meter, the rate of starting and stopping work can readily be ascertained by means of these power records. Dr. Vernon found that in a large shell shop which turned out 30,000 3-inch shrapnel shells per week, the power supplied began to mount up two minutes after starting time, and reached half its full value in four minutes; while the power supplied to a section of 200 women turning fuze bodies did not begin to rise till five minutes after starting time, and did not attain half its maximum value until six minutes later. In other words, the women operatives wasted about seven minutes more in starting than did the operatives in the shell shop, most of whom were men. On the other hand, the fuze-turners finished more strongly than the shell shop operatives, and it was found that both sets of operatives lost, on an average, about the same aggregate of time in starting and finishing during the course of the whole day—viz., 34 minutes. There was no inherent reason why work should have been started promptly in one shop and not in the other. Dr. Vernon considers there can be no necessity for the waste even of this amount of time in starting and finishing work, and that 10 or 15 minutes should be an ample allowance. The 20 minutes thereby saved could then be deducted from working hours without any reduction of output. The matter is of practical importance because, although stern necessity may compel long hours of labour on the part of many munition workers, it is evident that the shorter the times for which they are shut up in the factories the better their chances of health and happiness. At one large block of works the manager makes a point of going into the various shops at starting time and seeing that the operatives begin work promptly. In this way he found that a considerable amount of time was saved. Concentration at work has for a corollary longer hours at play, and is clearly shown by the memorandum to be a factor making for health.

SICKNESS BENEFIT AND VENEREAL DISEASES.

ONE serious obstacle in the way of early recognition of venereal disease and of its efficient diagnosis and treatment is now likely to be removed. At the present time venereal disease comes under the clause in the Insurance Act under which benefit is not given when illness is caused by wilful misconduct. The National Conference of Friendly Societies recently held in Liverpool was addressed by Dr. Otto May on behalf

of the National Council for Combating Venereal Diseases, who put the case very forcibly for the granting of sickness benefit by Friendly Societies, trades unions, and others to their members who were known to be suffering from venereal disease; to place, in fact, venereal disease in the same position as other infectious diseases as regards their treatment. Dr. May's address was well received, and a resolution was carried:—

That this executive committee of the National Conference of Friendly Societies, having seriously considered the report of the Royal Commission on Venereal Diseases and the several recommendations made therein, is of opinion that such vital national and domestic interests are involved that it is desirable, with a view to the effective treatment and possible ultimate extermination of such diseases, that societies should consider the advisability of revising their rules in such a manner that members shall not be deprived of sickness benefits by reason of their suffering from any such disease.

Besides this academic resolution, which might or might not carry force among the constituent Friendly Societies, a definite rule was suggested for adoption by Approved Societies pending the proposed amendment of the National Insurance Act. The rule is as follows:—

An insured member shall not be entitled to sickness or disablement benefit in respect of an illness or accident caused by his or her serious or wilful misconduct, provided that a member shall not be deprived of sickness or disablement benefit if incapable of work through venereal disease.

This action of the Friendly Societies is another welcome indication of the change of attitude among the public at large towards the treatment of venereal diseases, and increases the hope of a really efficient campaign in the future. This hope is fortified by the fact that the London County Council propose to carry into immediate effect the recommendations of the Royal Commission.

THE BRITISH JOURNAL OF OPHTHALMOLOGY.

IN 1857 a journal of ophthalmology was started by the staff of the Moorfields Eye Hospital under the title "*The Royal London Ophthalmic Hospital Reports*." The title was at that time somewhat misleading, for although the contributors consisted entirely of Moorfields surgeons and students, the periodical contained abstracts of the ophthalmic literature of foreign countries and other matter of cognate interest. This periscope of abstracts was discontinued after 1864, and perhaps partly owing to the lack of any such convenient source of information, the *Ophthalmic Review* was inaugurated in 1882. It differed from the *Reports* in being open to all comers for original communications, whilst specialising in short reviews of current literature. These two were the only British journals devoted to ophthalmology, and apart from the *Transactions of the Ophthalmological Society*, started in 1881, were the only medium for the contribution of articles specifically to ophthalmic surgeons until 1903, when Mr. Sydney Stephenson commenced the publication of the *Ophthalmoscope*. Thenceforth, until the present time, all three journals have continued to appear. At the outbreak of the European war in 1914 it was felt by many that British ophthalmologists should draw together and unite in issuing a single journal which would be more thoroughly representative of British ophthalmology. Indications were not wanting that such a scheme would meet with the approval and support of their colleagues in neutral and allied countries, and, indeed, one of the strongest supporters and even initiators of the idea was the late Professor Straub,

of Amsterdam. Hence it was that in July of this year the President of the Ophthalmological Society of the United Kingdom, Mr. Walter H. H. Jessop, called a meeting to consider the matter. Attendance at the meeting was necessarily by invitation, but the greatest care was taken by Mr. Jessop, in consultation with other prominent ophthalmologists, to ensure that the gathering should be thoroughly representative of all parts of the British Islands. The result was that negotiations were set on foot to incorporate the three existing journals in a new journal, to be called *The British Journal of Ophthalmology*. These negotiations proved most successful, and in order to carry out the scheme a meeting, to which all British ophthalmologists were invited to attend, was held at the Royal Society of Medicine on Sept. 20th. At this meeting a limited liability company was formed, and so far as the financial arrangements are concerned the success of the venture is already fully assured. It is proposed to commence the publication of the new journal in January, 1917, and from that date the *Royal London Ophthalmic Hospital Reports*, the *Ophthalmic Review*, and the *Ophthalmoscope* will cease to appear. The new journal will be edited, under the supervision of an editorial committee, by Mr. Stephenson, with the help of an assistant editor. There are obvious reasons why a period of national upheaval may appear ill-fitted for undertaking new responsibilities, but such reasons under close examination will not prove so cogent as their *prima facie* appearance warranted. Though individuals perish, the national life flows on and will continue to flow. The effects of to-day are the causes of to-morrow, and thus we, the inheritors of the past, are the guardians of the future. A revolution is a great opportunity for progress, and we feel assured that the ophthalmic surgeons of our nation, limited though their special sphere may be, are rightly actuated in thus making a bold effort to strengthen the foundations upon which they and their successors may the more firmly build.

SYMPTOMS PRODUCED BY JACKSON'S PARIETO-COLIC MEMBRANE.

THE part played by bands or adhesions in the causation of abdominal symptoms is still unsettled. In the *Medical Journal of Australia* Mr. C. E. Corlette has reported the following case which is important, as the symptoms were definitely shown to be due to Jackson's membrane. A girl, aged 19 years, was seen for severe pain in the right side of the abdomen. The attack had lasted for two days, but for the past six years or more the patient had pain in the same situation almost constantly. At various times acute exacerbations occurred. These attacks lasted several days, and had been diagnosed as appendicitis by her medical attendant, who recommended operation. All her life she had been subject to obstinate constipation, frequently requiring enemata. Examination showed her to be a well-developed, well-nourished girl of wholesome colour. The abdomen was of normal appearance, but palpation showed an area of marked tenderness at and a little above McBurney's point, with the right rectus muscle on guard. The temperature was normal, and the pulse-rate 96. There was no nausea or vomiting during the existing attack, though she had sometimes vomited during previous attacks. A provisional diagnosis of appendicitis

was made and the abdomen was opened. There was a very large cæcum distended with semi-solid faeces. Just above the cæcum the ascending colon was narrowed and bound to the right side of the abdomen by a stout, broad pericolic membrane (Jackson's membrane), taking origin from the parietal wall just above the incision. It was evident that this was the cause of the trouble. There was a small peritoneal fold at the ileo-cæcal junction; apparently it was not important. The appendix appeared to be normal. Appendicectomy was done, then the ileo-cæcal band was released, and afterwards the large band incarcerating the ascending colon was dealt with. This left the colon free and unhampered. Next day she was free from pain. For a few months after operation she continued to suffer a good deal from constipation, necessitating enemata at various times. Liquid paraffin relieved the constipation. However, her condition was greatly improved. The pain returned at times, but this, too, was obviously less. The symptoms became less and less, and finally disappeared. She has now for nearly two years been quite well. But another change was even more striking. Although she was physically well developed before operation, her mental development was only that of a child of 12. Further, she had always been subject to attacks of violent and uncontrollable passion, and was most difficult to manage. During the two years that have elapsed since the operation her mental condition has undergone marked improvement. The literature of intestinal bands and kinks is now considerable, but much of it is unconvincing, and Mr. Corlette has remained cautious and somewhat sceptical. He believes that there is something in the indictment against bands and kinks, but that there is a strong tendency to over-estimate their importance. He has loosened a good many bands during abdominal work, but beyond those of definitely inflammatory origin he has not been impressed with their importance as a factor in the production of symptoms. The case now described is an exception. He regards it as an unequivocal demonstration of the trouble produced by a congenital parieto-colic membrane and of the relief following operation.

THE WORK OF PAVLOV.

EARLY in the present year we published a biographical notice of the distinguished Petrograd physiologist Professor Ivan Petrovitch Pavlov, when an erroneous report of his decease reached this country, the confusion being between him and Professor Eugeni Pavlov, a well-known surgeon. Ivan Pavlov's existence among us, and the value of his work, were brought into prominence last week, when his services to physiology formed the subject of a public lecture by Professor W. M. Bayliss at University College, London. In two regions of physiology Pavlov has done pioneer work. His studies of the coördination of the digestive processes are the better known because, though written in Russian, they have been made accessible to French and English readers. Pavlov was not the first to examine the secretions of the alimentary canal by means of artificial fistulæ, but he was the first to make the process a fine art by introducing into the physiological laboratory the precise methods of antiseptic surgery. His institute in Petrograd included a series of rooms in which the experimental animal was first washed and shaved,

next anæsthetised, then submitted to operation, and finally passed on into a series of cubicles forming practically a little hospital. Other institutes, including that at University College, London, have been based on this model. Under these conditions the success of a gastric or intestinal fistula became as certain as that of a simple aseptic operation in man. By means of the gastric fistula Pavlov demonstrated the secretion of gastric juice before food actually reached the animal's mouth, and the absence of such secretion unless the animal regarded his food with relish. Starting from these observations he gradually built up the whole modern teaching of the sequence of the digestive processes. Pavlov's second and equally important work on conditioned reflexes has been less widely recognised, for it is as yet only accessible in original Russian and partly in German translation. He was the first to investigate the functions of the higher centres of the brain by strictly physiological method and to show how extremely modifiable by concurrent circumstances are the reflexes obtained from the higher centres. The building of a new laboratory with thick walls and small windows, in order to shut out disturbing external stimuli, became a necessity for this research. A growing insight into the mechanism of inhibition has been the result of this work, some clue to the essential nature of sleep, and a means of estimating the sensibility of the various sense organs. The lecturer did not suggest it, but it seems likely that Pavlov's work may throw light on the omnipresent factor of inhibition shown by sufferers from shell shock, and that a knowledge of his work on inhibition may prove to be an indispensable preliminary to the proper understanding of the psycho-analytic method. The lecture was attended on behalf of the Russian Ambassador by Baron Heyking, who gracefully acknowledged the growing recognition in this country of the achievements of Russian science. Over and above the originality of his work, amounting to real genius, Pavlov's generosity to his co-workers and pupils has made him the subject of a devoted affection and has formed a link in the chain of the Anglo-Russian scientific entente which is becoming realised.

CASE-TO-CASE INFECTION IN PNEUMONIA.

RECENT authorities agree that while pneumonia is unquestionably a communicable disease, it is not readily transmitted from person to person. Limited epidemics of pneumonia have been described, for the most part before the discovery of the pneumococcus had made the diagnosis a matter of precision. Even in epidemics where this organism has been proved to be the infective agent it must be remembered that the pneumococcus is such a frequent inmate of the fauces and naso-pharynx in health as to make it difficult to prove direct transference from person to person. When in two cases successively occurring in a household the same organism is isolated, the seed may have been lying dormant in each case and some common preparation of the soil have determined the incidence of the disease. The matter is still further complicated by the probability of the existence of healthy "carriers" of this as of the meningococcus. If the pneumococcus were not a single well-defined entity but included differing strains capable of precise identification, transference might more easily be demonstrated. In a brief paper in the June issue of the *Medical Journal of South Africa*, Mr. F. S. Lister contends that this is the case, and he cites, as an instance,

the successive illnesses of a married couple where the husband had acted as nurse to his wife and fell a victim to a precisely similar attack of pneumonia after an interval of 11 days. From the sputum of the second case Mr. Lister isolated, by passage through a mouse, a pneumococcus of a strain "G," which he identified through its agglutination by a stock anti-serum as belonging to a strain occurring but rarely in Europeans in South Africa, and this pneumococcus "G" gave the serological reaction in both the husband's and the wife's case, while no other strain which he tried did so. Recent researches by Dochez, Gillespie, and Avery in America confirm this view of the pneumococcus as a generic rather than a specific organism, and a further application of serological methods of identification may settle the vexed question of the origin of pneumonia epidemics.

ALCOHOL AND THE DEVELOPMENT OF THE FÆTUS.

THE present times have brought about at least one desirable condition of things—the serious problem and the serious man are more likely to receive serious attention than has been the vogue for many years past. More than this, the consideration of the serious problem and the serious man is far less likely to be upset by the pratings of the crank than was the case in times of peace. Into the workings of the legislature and into the workings of the laboratory alike has come a feeling that simple issues must be dealt with upon simple and effective lines, and that the eccentric and the mental gymnast must not be heard too far on questions into the solution of which much common sense and much accumulated human experience enter. For some years past it has been the fashion to pay an undue degree of homage to work which produced results contrary to common sense and accumulated experience. There is no need to single out examples of this type of research, for time and again we have been told that by some method—statistical, bacteriological, or chemical it may be—it had been determined beyond dispute that some custom we all supposed to be healthful was in reality bad, or some habit we all supposed to be noxious in reality did no harm to us nor to our descendants. With the accumulation of very much more of this type of work we might have looked for a day when the visitation of the sins of the fathers upon the children would have been regarded as an archaic formula. Of all questions which touch upon the present and future welfare of mankind, none has been exposed so much to the labours of the eccentric as has that of the influence of parental alcoholism upon the offspring. Common sense prompted the belief that the taking of any toxin into the system of the parent would probably affect the health of the germ cell, and so tend to be a harmful influence upon the well-being of the next generation. Accumulated experience confirmed this belief, and the average man confidently looked to see the children of alcoholic parents suffer in some degree from their parentage. In times of peace, when the breeding of the race up to its maximum of physical and mental effectiveness was not felt to be of the urgent moment that it is to-day, this was a subject in which any startling finding merely made a pleasing mental diversion. To be told that all our ideas upon the subject were wrong was a stimulus to academic argument, and provocative of but little else. But now if common sense and accumulated

experience can be backed by the weight of scientific experiment, and parental alcoholism can be shown to have its harmful effects upon future generations, then academic argument must be laid aside and the facts must plainly be told to a legislature and a people that was never before so well prepared to listen. It is therefore particularly opportune that at this time Dr. J. W. Ballantyne should give a résumé of his life work upon antenatal pathological conditions dependent on parental alcoholism; and should have ready to his hand the experimental results obtained by Stockard and Papanicolaou upon alcoholised guinea-pigs. It becomes abundantly clear that alcoholism in the parent exerts a harmful influence not only upon the individual germ cells (perhaps this is more marked in the male than in the female), but upon the conjoined cells, the embryo, and the foetus; this will be apparent to everyone who has followed Dr. Ballantyne's reasoning in a paper read last week before the Society for the Study of Inebriety. Its conclusion in Dr. Ballantyne's own words runs as follows: "Alcohol is a danger to antenatal health and a menace to antenatal life at every one of the stages of that existence and through each of the progenitors." Cogent teaching such as this must tend to deepen the feeling of individual responsibility. But the hope which the times hold out is now very great; for with the country's need for the fitness of the coming generations it is a wider circle which will pay attention to this thing. Although Dr. Ballantyne observes, "It seems that it is detail which is baffling the strongest of governmental powers even when reinforced by the example and the approbation of monarchs," he must also note that since August, 1914, many salutary ideas have been embraced by this country without the direct intervention of governmental powers. It is in his appeal to "all intending parents" that hope lies, and his moderation of diction makes this hope likely of attainment.

Dr. S. G. Moore (as we have already announced), Dr. Amand Routh, Dr. Comyns Berkeley, and Lady Barrett will introduce the discussion on the Care of Pregnant Women, to be held in the Section of Obstetrics and Gynaecology of the Royal Society of Medicine on Thursday, Nov. 2nd.

THE Conference of Representatives of Local Medical and Panel Committees of the British Medical Association is to begin on Thursday, Oct. 19th, at 10 A.M., in the Connaught Rooms, Great Queen-street, London, W.C., and to continue on the following day if necessary. The Conference is to review the action of the Insurance Acts Committee as a result of the resolutions of the 1915 Conference; to discuss the proposed modifications of the 1917 Agreement; to examine the position of practitioners in connexion with the treatment of venereal diseases; to receive the report of the Insurance Acts Committee of Conference with the Insurance Commission on the present method of remuneration for medical attendance under the Insurance Acts; and to consider the question of collective bargaining by the British Medical Association in regard to agreements between panel practitioners and Insurance Committees. The Local Medical and Panel Committees of each insurance area are asked jointly to send one representative, who need not necessarily be a member of the British Medical Association.

DIPLOMAS IN STATE AND TROPICAL MEDICINE.

It has been usual for us to include in the Students Number of THE LANCET an epitome of the introduction given at various universities and centres of medical education to medical men desiring to obtain diplomas in sanitary science, public health, state medicine, and tropical medicine. During the war some of this work has been suspended, for both teachers and taught being already registered medical men have been required in other spheres. But the public health of the country and of our colonial dependencies must be maintained, for this is one of our greatest guarantees of ultimate success in the struggle of endurance, and the machinery for the special education of public medical servants exists, as appears from what follows, and is ready to resume full activity at the earliest opportunity.

Resolutions, designed with a view of ensuring "the possession of a distinctively high proficiency, scientific and practical, in all the branches of study which concern the public health," have been adopted at various times by the General Medical Council from 1902 to 1911. Certain universities and corporations grant qualifications in Tropical Medicine which have not as yet been made registrable by statute.

University of Oxford.—An examination, conducted partly in writing, partly *visà voce*, and in each subject partly practical, is held in Michaelmas and Easter Terms in the following subjects:—General Hygiene, General Pathology (with special relation to Infectious Diseases), the Laws relating to Public Health, Sanitary Engineering, Vital Statistics. The examination is in two parts, which may be taken together or separately; but Part I. must be passed either before or at the same examination as Part II. The fee for admission to the examination is £5 for each part. Successful candidates are entitled to receive the Diploma in Public Health.

The First Part of the examination will comprise (a) a written paper of three hours in Chemistry and Physics; (b) a three hours' practical and *visà voce* examination in Chemistry and Physics.

The Second Part of the examination will consist of the following parts:—(a) Two written papers, each of three hours, dealing with General Hygiene (including Sanitary Engineering, Vital Statistics, and the Laws relating to Public Health); (b) a practical and *visà voce* examination in General Hygiene; (c) a written paper of three hours in Pathology and Bacteriology; and (d) a three hours' practical and *visà voce* examination in Pathology and Bacteriology.

Candidates in Part I. of the examination will be required to produce a certificate (1) of Laboratory Work in Chemistry as applied to Hygiene.

Candidates in Part II. will produce the following further certificates: (2) of a Practical Knowledge of the Duties, Routine and Special, of Public Health Administration; (3) of having had Practical Instruction in Bacteriology, and the Pathology of the Diseases of Animals transmissible to Man; and (4) of having attended the practice of a Hospital for Infectious Diseases at which opportunities are afforded for the study of the Methods of Administration. The courses of instruction in Chemistry applied to Hygiene and in Pathology and Bacteriology may be taken in the laboratories of any University in the United Kingdom, of any school of the University of London, of the Royal Army Medical College, of University College, Bristol, of any extramural school in Edinburgh, of Anderson's College, Glasgow, The Royal Institute of Public Health, and in any such other laboratory as may, in the case of any particular candidate, be approved of by the Regius Professor of Medicine. In the cases of certificates (2) and (4), the certificates shall be given in such form as shall satisfy the secretary to the Boards of Faculties that the candidate has conformed to the rules of the General Medical Council. The names of candidates must be sent to the Assistant Registrar of the University, Clarendon Building, Oxford, to whom applications for any further information should be addressed.

University of Cambridge.—Two examinations in so much of State Medicine as comprised in the functions of medical officers of health are held during the year. The examination is divided into two parts and demands

proficiency in all the branches of study which bear upon the duties of medical officers of health. The examinations in both parts will be oral and practical, as well as in writing. Candidates may present themselves for either part separately or for both together at their option; but the result of the examination in the case of any candidate will not be published until he has satisfied the examiners in both parts. Marks of distinction will be placed against the names of candidates who have specially distinguished themselves in either (1) general principles of hygiene; (2) bacteriology; (3) chemistry in Part I. of the examination; or (4) the second part of the examination, which has reference to State Medicine and to the applications of Pathology and Sanitary Science. Every candidate will be required to pay a fee of £6 6s. before admission or readmission to *either part* of the examination, but candidates who have presented themselves before the year 1896 will be readmitted to either part on payment of a fee of £5 5s. Candidates must before admission to either part of the examination produce evidence of having satisfied provisions (1), (2), and (3), and before admission to Part II. having satisfied provision (4), above mentioned.

Two Examinations in Tropical Medicine and Hygiene are conducted yearly by the State Medicine Syndicate of the University of Cambridge. The examinations are held in Cambridge early in January and in the middle of August. Each examination will extend over four days.

Any person whose name is on the Medical Register is admissible as a candidate to the examination provided (I.) that a period of not less than 12 months have elapsed between his attainment of a registrable qualification and his admission to the examination; (II.) that he produce evidence, satisfactory to the Syndicate, that he has diligently studied Pathology (including parasitology and bacteriology) in relation to Tropical Diseases, Clinical Medicine, and Surgery at a Hospital for Tropical Diseases, and Hygiene and Methods of Sanitation applicable to Tropical Climates. As evidence of study and attainments a candidate may present to the Syndicate (1) any dissertation, memoir, or other record of work carried out by himself on a subject connected with Tropical Medicine or Hygiene; (2) any Certificate or Diploma in Public Health or Sanitary Science he may have obtained from a recognised Examining Body. Such evidence will be considered by the Syndicate in determining whether he is qualified for admission to the examination and by the examiners in determining whether, if admitted, he shall be included in the list of successful candidates.

The examination will be partly in writing, partly oral, and partly practical and clinical (the clinical part will be conducted at a hospital for tropical diseases, at which cases will be submitted for diagnosis and comment), and will have reference to the nature, incidence, prevention, and treatment of the epidemic and other diseases prevalent in tropical countries. Every candidate who passes the examination to the satisfaction of the examiners will receive from the University a diploma testifying to his knowledge and skill in tropical medicine and hygiene. The fee for the examination is £9 9s., and applications should be addressed to Dr. Graham-Smith, Medical Schools, Cambridge.

All applications for further information respecting these examinations and the courses of study should be addressed to the State Medicine Syndicate, the Chemical Laboratory, Pembroke-street, Cambridge.

University of London.—Candidates for the M.D. degree may offer State Medicine as a subject in which to graduate. Certificates must be produced showing that a course of practical instruction has been attended for the prescribed period, and that the course has included such chemical, microscopical, and meteorological work and exercises as more especially relate to sanitation. The attendance includes six months' practical instruction in a laboratory and six months' instruction in public health administration under the supervision of a medical officer of health, and three months' attendance on the practice of a hospital for infectious diseases. The examination consists of papers in State medicine, including hygiene, school hygiene, and forensic medicine; a paper in medicine; an essay; and a two days' practical examination. Candidates must satisfy the examiners both in the papers and in the practical tests. A *visà voce* examination may be held at the discretion of the examiners. In connexion with this degree the various

metropolitan medical schools hold regular classes under teachers of Public Health and Sanitary Science, such instruction being also used to obtain the various diplomas of other Universities and of those Royal Corporations which grant them.

University of Durham.—Sanitary Science is the special object of the degrees in Hygiene. Candidates for the degree of Bachelor of Hygiene (B.Hy.) must be at least 22 years of age, registered, and a graduate in Medicine of a recognised university. They must spend six months at Newcastle-upon-Tyne studying Comparative Pathology, Practical Bacteriology, Sanitary Chemistry, and Physics, and have to pass an examination in Sanitary Chemistry, Physics, Comparative Pathology, Sanitary Legislation, Vital Statistics, Nosology, Climatology, Meteorology, Distribution of Health and Disease, Sanitary Medicine and Practical Hygiene. The fee for the examination for the degree of B.Hy. is 10 guineas and for the degree £6 6s. Candidates for the degree of Doctor of Hygiene (D.Hy.) must have acquired the degree of Bachelor of Hygiene, must for two years subsequently have been engaged in Public Health administration, or in research work relating to Public Health. The fee for the examination for the degree of D.Hy. is £5 and for the degree £6 6s. The regulations for examination for the Diploma in Public Health (D.P.H.) are the same as those for the degree of Bachelor of Hygiene, except that the candidate is not required to be a graduate in Medicine of a recognised University and the course of study need not be passed at Newcastle-upon-Tyne. The fee for the examination is 10 guineas and for the Diploma £3.

Victoria University of Manchester.—An examination in Public Health is held twice yearly. The examination is in two parts and is written, oral, and practical. Candidates may present themselves for Parts I. and II. separately or at the same time, provided that no candidate be admitted to Part II. unless he has already passed in Part I. No candidate's name will be published until he has satisfied the examiners in both parts of the examination. The fee for each part is £5 5s., and must be paid on or before July 1st in each year. For any subsequent examination in the same part the fee will be £3 3s. Every candidate who has passed both parts of the examination to the satisfaction of the examiners, and who is legally registered, will receive a Diploma in Public Health. The examinations will begin about the end of March and the middle of July in each year. Holders of the Diploma in Public Health are eligible for examination for the Certificates in School Hygiene and Factory Hygiene after attending the prescribed periods of study and hospital practice.

University of Birmingham.—The University grants a degree of B.Sc. in Public Health and also a Diploma in the same subject on the following conditions: Graduates in Medicine of this University may become candidates for the degree of Bachelor of Science in Public Health, by conforming to all the requirements laid down for candidates for the Diploma in Public Health, except that after graduating in Medicine all courses of study must be taken out in the University, and they must, in addition, have attended a three months' course of Geology in the University. The examinations will be held in the months of March and June and will consist of two parts, each part being written, oral, and practical. No candidate will be allowed to pass Part II. until he has passed Part I. Candidates may enter for Parts I. and II. separately or at the same time. The fee for each part of the examination is £5. Medical Officers of the Royal Navy who have attended courses in Hygienic Chemistry, Bacteriology, and Public Health at the Naval Medical School, Greenwich, will be admitted to the examinations for the Diploma in Public Health, whether they have previously been students at the Birmingham School or not; and the same applies to officers of the Royal Army Medical Corps who have studied Chemistry and Bacteriology at the Staff College and pursued the further course of study approved by the General Medical Council.

University of Liverpool.—The University grants a Degree in Hygiene (M.H.) and a Diploma (D.P.H.), and every facility is afforded for training in Sanitary Science and State Medicine. The curriculum for the Degree extends over a period of two years, the first of which is devoted to laboratory instruction and practical classes (including those for the Diploma); the second being devoted to advanced

study and research. The D.P.H. curriculum fees are: Chemistry, £5 5s.; Bacteriology, £5 5s.; Practical Sanitation, £15; Infectious Diseases, £3 3s. The courses may be taken out at any time, and students are allowed to work daily in the laboratories.

The University grants a Diploma in Tropical Medicine. Three courses of instruction are given every year. Two of these last for three full months—the Lent Course from Jan. 6th to April 5th and the Autumn Course from Sept. 15th to Dec. 13th. The Third Course, an Advanced Course, lasts one month, from June 1st to the 30th. At the end of each full course an examination is held by the University for its Diploma of Tropical Medicine (D.T.M.), which is open only to those who have been through the course of instruction of the school. The examination lasts three days and consists (1) of papers on Tropical Medicine, Tropical Pathology, and Tropical Sanitation and Entomology respectively; (2) of a clinical examination; and (3) of an oral examination. The advanced course consists entirely of Practical and Clinical Laboratory Work, given at the laboratory at the University. The fee for the full course of instruction is 13 guineas, with an extra charge of 10s. 6d. for the use of a microscope if required. The fee for the examination is 5 guineas. Applications should be made to the Dean of the Medical Faculty, University of Liverpool. Two University Fellowships of £100 a year each are open to students of the school, amongst others. Accommodation for research work is to be had at the University Laboratory. The Mary Kingsley Medal is awarded by the school for distinguished work in connexion with Tropical Medicine. The new laboratories are completed and ready for occupation on the termination of the war.

University of Leeds.—The University grants a Diploma in Public Health, and every facility is afforded for training in Sanitary Science and State Medicine. The examination, which is held twice in each year—namely, in June and December—is in two parts, and is written, oral, and practical. Candidates, before entering for the first part of the examination, must have held for not less than 12 months a registrable qualification in Medicine, Surgery, and Midwifery, and must present satisfactory certificates of having attended an approved course of instruction in Public Health in the University, or in a college or medical school recognised for this purpose by the University. Candidates before entering the second part of the examination must present certificates of having, after obtaining a registrable qualification, attended during not less than three months the clinical and administrative practice of a hospital for infectious diseases approved by the University. Candidates may present themselves for Parts I. and II. separately or at the same time, provided that no candidate be allowed to pass in Part II. unless he has already passed in Part I. Fees—The fee for each part is £5 5s., and for any subsequent examination in the same part £3 3s.

University of Sheffield.—The examinations for the Diploma in Public Health are open to all registered medical practitioners who have completed approved courses of study. The examination shall be in two parts. The subjects of the examination in Part I. shall be Chemistry and Bacteriology. Candidates may present themselves for examination in the subjects of Part I. either separately or at the same time. The subjects of the examination in Part II. shall be the General Principles of Public Health, with especial reference to Epidemiology, trade diseases, sanitation, inspection of articles of food, the storage and purification of water, and the principles of drainage. Parts I. and II. of the examination may be taken separately or at the same time. Courses of lectures and practical instruction in the subjects of the examination are given at the University. These courses may be attended by students intending to become candidates for the Diploma in Public Health of other Universities.

University of Bristol.—Diploma in Public Health. Candidates must be at least 23 years of age, shall be fully registered medical practitioners of not less than 12 months' standing as such, and shall have passed the examination prescribed by regulation. The examination is divided into two parts. The subjects of the First Part are Chemistry as applied to Public Health and Pathology and Bacteriology. Candidates for the First Part shall, during six months after having obtained a registrable qualification, have received practical laboratory instruction in Hygienic Chemistry, in

Bacteriology, and in the Pathology of the Diseases of Animals Transmissible to Man. The subjects of the Second Part are: Public Health and Epidemiology, Sanitary Law, Vital Statistics, and Sanitary Reporting. Candidates for the Second Part shall, during six months after having obtained a registrable qualification, have been diligently engaged in acquiring a practical knowledge of the duties, both routine and special, of public health administration under the supervision of certain persons specified by the General Medical Council, a list of which can be obtained from the prospectus.

University of Edinburgh.—Two degrees in Science in the Department of Public Health are conferred by the University of Edinburgh—viz., Bachelor of Science in Public Health and Doctor of Science in Public Health. A Diploma in Tropical Medicine and Hygiene is also granted. Candidates for the degree of B.Sc. in Public Health must be graduates in Medicine of a recognised University, and must pass two examinations, for the first of which they must, after graduation in Medicine, have worked for at least 20 hours per week during a period of not less than eight months, of which at least five consecutive months must be in the Public Health Laboratory of the University of Edinburgh and the remainder either there or in a laboratory recognised by that University; they must also have attended courses of instruction in Physics and Geology in some Scottish University. Candidates are admitted to the Second Examination six months after having passed the First Examination, and must have attended two courses in Public Health approved for the purpose by Edinburgh University, each course consisting of 40 lectures at least; one of which courses shall deal with medicine and the other with engineering, each in its relation to public health. Graduates who have held the degree of B.Sc. in Public Health from the University of Edinburgh for a term of five years may offer themselves for the degree of D.Sc. in Public Health in that University. The fees are £3 3s. for the First and £3 3s. for the Second B.Sc. Examinations, and £10 10s. for the degree of D.Sc.

University of Aberdeen.—The Diploma in Public Health (D.P.H.) is conferred only on graduates in Medicine of a University in the United Kingdom not less than 12 months after medical graduation. Every candidate must produce evidence of having attended, after graduation in Medicine, during a period of six months, practical instruction in Hygiene and Bacteriology in laboratories approved of by the University, together with having during six months (whereof three months must be distinct from the period of laboratory instruction) been diligently engaged in acquiring a practical knowledge of the duties, routine and special, of Public Health administration under the medical officer of health of a county or large urban district. He must have regularly attended for three months the practice of a hospital for infectious diseases at which opportunities are afforded for the study of methods of administration. He must also have obtained practical instruction in the drawing and interpretation of plans. The diploma is conferred after an examination in Public Health held in March and July of each year. The fee is £5 5s.

University of Dublin (Trinity College).—The Diploma in Public Health is conferred, after examination, on the following conditions. The candidate must be a registered medical practitioner and have obtained a registrable qualification at least nine months before the examination. The candidate must have completed, subsequently to obtaining a registrable qualification, four months' practical instruction in a chemical and bacteriological laboratory or laboratories approved by the University, must have studied practically outdoor sanitary work for six months under an approved officer of health, and must have spent three months in a fever hospital where opportunities are afforded for the study of methods of administration. A special prospectus and a list of recognised laboratories may be obtained by application to the Registrar of the School of Physic, Trinity College, Dublin.

National University of Ireland.—At this University there is a Diploma in Public Health and a B.Sc. in Public Health. The Diploma may be granted to matriculated or non-matriculated students of the University who shall have completed approved courses of study and shall have passed the prescribed examinations, provided that it shall not be granted except to a registered medical practitioner. Candidates may present themselves for the examination after

an interval of not less than 12 months from the time of obtaining a registrable qualification. The curriculum extends over a period of not less than nine calendar months. Every candidate must produce a certificate that he has attended practical instruction in a laboratory, approved by the University, in Chemistry, Bacteriology, and the Pathology of the diseases of animals transmissible to man. The examination consists of two parts, which may be passed separately or together. Part I. comprises the following subjects: Chemistry, Meteorology and Climatology, and Sanitary Engineering and Architecture. Part II. comprises the following subjects: Bacteriology, Hygiene, Sanitary Law, and Vital Statistics. The examination in each part will be oral and practical as well as written.

For the B.Sc. in Public Health a candidate shall not be admitted unless he (a) shall have received the degrees of M.B., B.Ch., and B.A.O. at least one year previously; (b) shall have pursued an approved course of study in the Faculty of Medicine; and (c) shall have passed the prescribed examination. In addition to D.P.H. course the candidate will be required to take up (1) a Special Course of Pathology; (2) Bacteriology; and (3) Advanced Course in Hygiene. Each of these courses lasts three months.

University of Belfast.—A Diploma in Public Health is given by examination. Every candidate must produce evidence that, after obtaining a registrable qualification, he has during six months received practical instruction in an approved laboratory in which Chemistry, Bacteriology, and the Pathology of the diseases of animals transmissible to man are taught. After obtaining a registrable qualification every candidate must produce evidence that he has attended during three months the practice of a hospital for infectious diseases at which opportunities are afforded for the study of methods of administration. The examination must have extended over not less than four days, one of which shall have been devoted to practical work in a laboratory, and one to practical examination in, and reporting on, subjects which fall within the special outdoor duties of a medical officer of health. The examination will be held once yearly, Part I. in March, and Part II. in June. The first part of the examination will have reference to the general principles of sanitary science, and the second part to State Medicine and to the applications of Pathology and Sanitary Science. The fee for each part is 1 guinea.

Royal College of Physicians of London and the Royal College of Surgeons of England.—The following are the regulations for obtaining the Diploma in Public Health: The examination consists of two parts. The first part of the examination takes place in January, April, and July, and the second part in January and July. The fee for each part is £10 10s., except for those who are diplomates of the Royal Colleges, who pay £6 6s. for each part. A candidate intending to present himself must give 14 days' written notice to the Secretary, at the Examination Hall, Queen's-square, Bloomsbury, W.C. He will be admissible to examination in Part I. on producing evidence (1) of having been in possession of a registrable qualification for at least 12 months; (2) of having attended thereafter practical instruction in a laboratory recognised by the Examining Board in England for at least 240 hours during a period of six months; and (3) of being at least 23 years of age. A candidate will be admitted to Part II. of the examination on producing evidence (1) of having been diligently engaged in acquiring a practical knowledge of Public Health administration during six months under certain specified conditions; (2) of having attended during three months the clinical practice of a hospital for infectious diseases; and (3) of being at least 24 years of age.

The Examination for the Diploma in the Diseases and Hygiene of the Tropics has been discontinued during the war.

The Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, the Royal Faculty of Physicians and Surgeons of Glasgow.—All candidates for the Diploma in Public Health must have a qualification which has been registered under the Medical Acts. Candidates must have attended not less than four calendar months' practical instruction in Chemistry and Bacteriology in a recognised laboratory or laboratories, must have studied outdoor sanitary work for six months under a medical officer of health or other sanitary officer; and must give evidence of attendance for three months at the practice of a Hospital for Infectious Diseases, at which he has

received instruction in the methods of administration. The examination consists of two parts, and candidates may enter for both at one period or for either separately. The First Part includes (a) Laboratory Work (Chemistry and Bacteriology), (b) Physics and Meteorology; and the Second Examination embraces (a) Report on Premises visited, (b) Examination at Fever Hospital, (c) Examination at Public Abattoir, (d) Written and Oral Examinations on Epidemiology and Endemiology, (e) Vital Statistics and Sanitary Law, and (f) Practical Sanitation. The fee is 12 guineas for both examinations, or 6 guineas for either of them. A fee of 3 guineas is payable by rejected candidates for either examination. The examination is held twice yearly, in May and October. The published regulations provide detailed synopses of the subjects of examination. The Registrar for Edinburgh is Mr. D. L. Eadie, 50, George-square, and for Glasgow Mr. Walter Hurst, 242, St. Vincent-street.

Royal College of Physicians of Ireland and Royal College of Surgeons in Ireland.—Every candidate for the Diploma in Public Health must be a registered medical practitioner. He must subsequently to qualification (1) receive six months' laboratory instruction in Chemistry, Bacteriology, and the Diseases of Animals transmissible to man; and (2) during six months practically study outdoor sanitary work under a medical officer of health, and shall as an additional requirement attend a hospital for infectious diseases. Candidates are examined on four days, commencing on the first Monday of February, May, and November. The examination comprises the following subjects:—Hygiene, Chemistry, Meteorology and Climatology, Engineering, Vital Statistics, Sanitary Law, and Bacteriology. The fee for the examination is £10 10s. For further particulars apply to Alfred Miller, Secretary, Committee of Management; Office, Royal College of Surgeons, Dublin.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

Temporary Surgeons: H. E. Scowcroft to *Victory*, for R.N. Barracks; and G. Lillico to *Vernon*.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon: W. H. Bleden to *Blake*.

ARMY MEDICAL SERVICE.

Temporary Colonel V. W. Low, C.B. (Captain, R.A.M.C., T.F.), relinquishes his temporary commission.

ROYAL ARMY MEDICAL CORPS.

Captain Frank A. Hepworth, R.A.M.C., T.F., to be temporary Major whilst employed at the Wharnclyffe War Hospital.

To be temporary Captains whilst employed at the Keighley War Hospital:—J. N. Dobie and J. M. Crocker.

Robert Spence Barnard (Fleet Surgeon, R.N., retired) to be temporary Honorary Captain.

Temporary Lieutenant H. E. Newman relinquishes his commission on account of ill-health.

Temporary Honorary Lieutenant F. W. Goyder to be temporary Honorary Captain whilst employed at the St. John Ambulance Brigade Hospital.

A. T. Paterson to be temporary Honorary Lieutenant whilst employed with the St. John Ambulance Brigade Hospital.

ROYAL ARMY MEDICAL CORPS: SPECIAL RESERVE OF OFFICERS.

Lieutenant J. M. Watt to be Captain.

Temporary Lieutenant G. H. Barry, from Lancashire Fusiliers, to be Lieutenant.

ROYAL ARMY MEDICAL CORPS: TERRITORIAL FORCE.

West Lancashire Field Ambulance: Major R. Coffey to be temporary Lieutenant-Colonel whilst commanding a Field Ambulance.

East Anglian Field Ambulance: Lieutenant E. N. Hoffmeister to be Captain.

Wessex Field Ambulance: Major T. P. Puddicombe to be temporary Lieutenant-Colonel whilst commanding a Field Ambulance. Captain (temporary Major) H. N. Collier relinquishes his temporary rank on ceasing to command a Stationary Hospital.

Home Counties Field Ambulance: Captain J. R. Chalmers, from T. F. Reserve, to be Captain.

Wessex Casualty Clearing Station: Lieutenant Cyril A. Raison to be Captain.

Attached to Units other than Medical Units.—Major T. Kay to be temporary Lieutenant-Colonel whilst commanding a Field Ambulance. Lieutenant J. E. S. Wilson to be Captain.

Correspondence.

"Audi alteram partem."

MEDICAL CERTIFICATES AND FITNESS FOR MILITARY SERVICE.

To the Editor of THE LANCET.

SIR,—I cannot agree with Surgeon-Captain G. Sherman Bigg, whose letter on this subject appeared in your issue of Oct. 7th, that "the civilian practitioner practically is bound to give to a patient a certificate, but he words it in such a way that an intelligent military medical officer should be able to read between the lines," although no doubt this practice has prevailed to some extent, and much of "the differences of opinion" between military and civilian medical men may so be accounted for.

One is well aware of the pressure that is brought to bear upon the family doctor by anxious parents, interested business connexions, or the applicant himself, who is very apt to confuse his business interests with his health condition; but it is the duty of the civilian practitioner to advise his patient frankly whether there is or is not any physical or mental condition rendering him wholly or partially unfit for military service, and it seems to me that any certificate given for the consideration of the medical officer of the recruiting centre should plainly put the grounds upon which the medical opinion is based. The military medical officer cannot be expected to have time or inclination to "read between the lines."

Of course, the last word must be with the responsible military medical officer, but in my experience he, as a rule, gladly avails himself of any information given by private medical practitioners, when clearly expressed.

I am, Sir, yours faithfully,

Oct. 9th, 1916.

R. DOUGLAS POWELL.

THE PREVALENCE OF VENEREAL DISEASES IN THE TROPICS.

To the Editor of THE LANCET.

SIR,—In reading the report of the recent Royal Commission on Venereal Diseases one is struck, as a practitioner in the tropics, at the lack of reference to the tropical colonies as a source of infected individuals. In Appendix 7 mention is made in the case of Liverpool that the worst cases are those infected abroad. No mention is made of the relative numbers. The case-books of the syphilologists in London would, I think, show a very large proportion of cases from the various tropical colonies.

The Colonial Medical Service has to some extent followed the Army and Navy in providing facilities for special work, but not, as far as I am aware, in venereal diseases. There are probably no statistics on the matter apart from hospital records, but most medical men in the tropics would, I think, endorse the view that there is much invaliding and loss of efficient work both among the official and unofficial members of the European community. My reason for writing this letter is that I deem the present time an opportune one to draw attention to the subject in countries where such diseases are not only very common but, owing to the climate and the presence of tropical disease, difficult to cure.

I am, Sir, yours faithfully,

RICHARD ROPER.

Ipoh, Federated Malay States, Sept. 9th, 1916.

THE NURSING PROFESSION IN INDIA.

To the Editor of THE LANCET.

SIR,—In a note under the above heading in THE LANCET of August 5th you say that the result of Dr. Masina's experiment to attempt to induce educated ladies of the Parsi community to train as sick nurses will be watched with interest, not only by the Parsi community but by the Indian community at large. It is not out of place in this connexion to draw your attention to the fact that in Bengal the Lady Carmichael Nursing Association is training nurses at the Sambunath Pundit Hospital in Calcutta, at the Scotch

Mission Hospital at Kalimpong, and at the Victoria Hospital in Darjeeling. The material is excellent, and the progress achieved in training is remarkable, reaching a standard far beyond that for which it seemed justifiable to hope a year ago. The result of this experiment in Bengal merits at least as close an interest on the part of the Indian community at large as does the training of Indian nurses in the Western Presidency to which you refer.

I am, Sir, yours faithfully,

Darjeeling, Sept. 15th, 1916.

CLAYTON LANE.

ALCOHOL IN THE TROPICS.

To the Editor of THE LANCET.

SIR,—How Dr. Lucas Benham could write about alcohol as he does in your issue of Sept. 23rd passes my comprehension. I am not a bigot. I use alcohol when indicated. Often I administer brandy to patients recovering from cholera, &c., but the man in the East who commences to drink whisky, &c., is playing with fire; he may not get burnt, but he generally does. I have been working in a Chinese port, and my experience all goes to prove that club life, lonely stations, human frailty—all tend to make easy the descent to a drunkard's grave.

If Dr. Benham does not know this he has either gone through life with his eyes shut, or else has never lived in the tropics.—I am, Sir, yours faithfully,

C. G. S. BARONSFEATHER, M.D. Dub.

Kingstown, co. Dublin, Oct. 4th, 1916.

MEDICAL WOMEN AND EQUALITY OF PAY.

To the Editor of THE LANCET.

SIR,—I write to draw attention to the worse terms offered to medical women as compared with men by both the Ministry of Munitions and the War Office. The former is trying to obtain women doctors for munition works at £400 a year, while men receive £500. The War Office does not pay the £30 for outfit nor give rank. We women doctors have stood out so hard for equal pay for equal work that it is to be hoped these differences will be rectified.

I am, Sir, yours faithfully,

Colwall, Malvern, Oct. 3rd, 1916.

MARY H. WILLIAMS.

THE EFFECT OF FRESH HUMAN BLOOD SERUM ON ARTIFICIAL MEDIA.

To the Editor of THE LANCET.

SIR,—With reference to the articles on this subject in your issues of August 19th and Sept. 2nd, we have recently had occasion to examine several specimens of serum ultra-microscopically. When freshly drawn the insoluble colloidal protein contained therein displays far greater Brownian movement than if the serum has been standing some time. The ultra-microscopic appearance of serum is very similar to that of collosol iodine. The combination of amino-acids, which is the protective of the colloidal protein in serum (the latter, of course, containing the electrolyte sodium chloride, which would naturally destroy the colloidal condition but for the presence of protective) is more perfect than we have hitherto been able to manufacture, although we approximate very closely thereto. In our experience the germicidal value of a colloidal solution to some extent depends upon the amount of Brownian movement displayed by the individual particles. If this is so in the case of serum the reason why fresh serum should not be employed as a medium is evident; indeed, it is probable that absolutely fresh serum would exhibit mild germicidal properties. On the other hand, if fresh serum were subjected to ultra filtration in order to remove the colloidal protein it is probable that a perfect growing medium would be obtained. As a matter which might perhaps open a field for investigation, in the few cases which we have been able to investigate, the individual particles in protozoal serum appear larger than those in normal serum.

I am, Sir, yours faithfully,

JOHN WARD,

Elgin-crescent, W., Oct. 4th, 1916. Manager, Crookes' Colloids, Ltd.

MISS EDITH CAVELL AND HOMES OF REST FOR NURSES.

To the Editor of THE LANCET.

SIR,—Will you kindly allow me to take advantage of the fact that Oct. 12th is the first anniversary of the death of my sister, Edith Cavell, to say that she had long cherished the idea of establishing homes of rest for nurses. She had hoped to devote the latter years of her life, when her work in Brussels had finished, to providing places where nurses in need of temporary mental and physical rest from their work could receive the benefit of a real home, and so become again able to take up the burden of life with some chance of success.

After serious thought I decided to try to put my sister's project into practical shape, and I am glad to say that I have met with strong and wide support. An influential council has already been formed, and its members have satisfied themselves that there is a definite need for such homes in the nursing world. It is certain that this need will become increasingly acute as the war continues, and that when the war is over it will remain acute for a considerable period thereafter. This consideration alone should find an echo in the hearts of all desirous of helping those who have devotedly laboured in a time of national stress, who are interested in the welfare of working women, and who love and respect the memory of Edith Cavell, who gave her life to the profession of nursing.

May I add that a freehold house standing in about 3½ acres of ground in a most suitable locality, which will deal with the needs of about 100 nurses yearly, has been offered to me as a gift, provided that a fund sufficient for its permanent endowment as a home can be raised. And, lastly, may I hope that when the council puts forth its appeal it may find a response in all parts of the British Empire.

I am, Sir, yours faithfully,

F. M. SCOTT CAVELL.

The Hull and East Riding Convalescent Home, Withernsea, E. Yorks.
Oct. 10th, 1916.

* * We have received a list, as yet a private one, of those who have already consented to join the council. They form an influential group of men and women, representative in every respect. We recommend the movement cordially to our readers as one for which they should obtain support from their patients. Donations may be sent to either Major W. McAdam Eccles, 124, Harley-street, W., or Mr. R. Martin-Holland, Martin's Bank, 68, Lombard-street, E.C., the treasurers of the fund.—ED. L.

By a misreading of the manuscript, the affix "Mrs." was added to Mr. E. W. Hutton's signature in the letter which appeared from him last week pleading for routine radioscapy in military hospitals. Mr. E. W. Hutton is the chief radiologist at the Hôpital Notre Dame des Grèves, St. Malo.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.—The first selection of President of the Royal College of Physicians under the new scheme took place last week, and has resulted in the nomination of Dr. Joseph F. O'Carroll, professor of medicine in University College, Dublin. On the last Friday in September the Fellows selected by ballot three candidates for the Presidency, of whom Dr. O'Carroll was one. The other two having signified their unwillingness to accept the office, Dr. O'Carroll's name will be submitted formally for election on St. Luke's Day.

THE LATE DR. ST. CLAIR B. SHADWELL.—Dr. St. Clair Shadwell, a well-known practitioner in the North-East of London, died at his residence at Walthamstow on Sept. 23rd, at the age of 64. He received his medical education at Guy's Hospital, obtaining the Membership of the Royal College of Surgeons of England in 1875. Subsequently, in 1891, he took the D.P.H. of the English Conjoint Board, and graduated M.D. of St. Andrews University four years later. After holding appointments at Guy's Hospital and the Great Ormond-street Hospital, he entered upon medical practice at Walthamstow, where he was consulting medical officer to the Dispensary, and for 13 years medical officer of health. He also had held the posts of certifying factory surgeon, medical examiner to the Board of Education and medical officer to the Post Office. An ardent Volunteer, he joined the movement quite early in his career, and received the V.D., retiring with the rank of Surgeon-Lieutenant Colonel of the 1st Volunteer Brigade Essex Regiment.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Capt. S. Clark, R.A.M.C., was a student at King's College Hospital, London, and qualified in 1896. He had held appointments at King's College Hospital and at Leeds General Infirmary, and was in practice at Fulham-road, London, prior to joining the R.A.M.C.

Capt. T. L. Ingram, D.S.O., M.C., R.A.M.C., attached King's Shropshire Light Infantry, was educated at Cambridge University and at the London Hospital, and qualified in 1903. He was at one time house surgeon at the Westminster Hospital and also at the Poplar Hospital, and when he joined the R.A.M.C. he was a medical officer of the Lutterworth Union and of the Market Harborough Union.

Capt. W. F. MacAlevey, R.A.M.C., was a student at St. Mary's Hospital, London, and qualified in 1915. He thereupon joined the R.A.M.C., and obtained his captaincy in February last.

Capt. F. S. Walcott, R.A.M.C., attached Northumberland Fusiliers.

Capt. E. R. Welch, R.A.M.C., attached Durham Light Infantry.

Died.

Surgeon W. H. Edmunds, R.N., qualified L.M.S.S.A. Lond. in 1913.

Wounded.

Capt. L. Adamson, R.A.M.C.

Capt. G. D'R. Carr, R.A.M.C., attached Sherwood Foresters.

Capt. H. Mathews, R.A.M.C., attached Northampton Regiment.

Capt. N. J. Barton, Canadian Army Medical Corps.

Capt. H. W. Baily, R.A.M.C.

Lieut. W. A. Cochrane, R.A.M.C., attached Leicestershire Regiment.

Lieut. J. N. Cruikshank, R.A.M.C., attached Liverpool Regiment.

Lieut. T. M. Crawford, R.A.M.C.

Capt. W. C. Stewart, R.A.M.C.

Capt. B. N. Murphy, R.A.M.C., attached Coldstream Guards.

Lieut. J. Oag, R.A.M.C., attached Manchester Regiment.

Capt. O. A. Elliott, Canadian Army Medical Corps.

Capt. W. R. Pagen, R.A.M.C., attached East Kent Regiment.

Capt. E. R. Selby, Canadian Army Medical Corps, attached Canadian Infantry.

Previously reported presumed Prisoner at Kut-el-Amara, now reported Prisoner in Turkish Hands.

Capt. L. Murphy, R.A.M.C.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Second Lieut. C. T. Rennie, Leicestershire Regiment, son of Dr. G. E. Rennie, J.P., of Sydney, New South Wales.

Lieut. G. J. R. Saunders, South Lancashire Regiment, attached Leicestershire Regiment, youngest son of Dr. E. A. Saunders, J.P., of Pembroke Dock, South Wales.

Second Lieut. S. M. Scott, Coldstream Guards, younger and only surviving son of the late Mr. J. H. Scott, F.R.C.S.I., of Dublin.

Capt. W. F. MacAlevey, R.A.M.C., son of Dr. W. C. MacAlevey, of Leicester.

Lieut. M. Wheeler-O'Bryen, Royal Warwickshire Regiment, elder son of Dr. J. Wheeler-O'Bryen, of Sydenham, London, S.E.

G. Addison, Canadian Expeditionary Force, eldest son of Dr. W. B. Addison, of the Scilly Isles.

HOSPITALS FOR WOUNDED OFFICERS.—A temporary hospital for officers, which after the war will be transferred to permanent quarters as a Russian Hospital in London, is to be opened in a house in South Audley-street, lent for the purpose by Sir Berkeley and Lady Sheffield. M. Mouravieff-Apostol and his wife are the donors of the new institution.—The Government has taken over possession of the Great Central Hotel, Marylebone, as a convalescent home for wounded officers. The building contains some 500 rooms.

OBITUARY OF THE WAR.

MORTON PETO, M.B., CH.B. LEEDS,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain M. Peto, who died of wounds on Sept. 22nd at the age of 26 years, was the fourth son of the late Rev. A. H. Peto, of Leeds. Educated at Leeds Grammar School, he went on to the University and Medical School in Leeds. After



graduating M.B., Ch.B. in 1912, he held resident posts at the Women and Children's Hospital, and at the outbreak of war he resigned the appointment of ophthalmic house surgeon at the General Infirmary to take a commission in the R.A.M.C. At first in charge of a field ambulance, he was later attached to the Cameron Highlanders and the Royal Berks Regiment. He was mentioned in Lord French's last despatch and was awarded the Military Cross for gallant conduct in June, 1916. The night

before he met his death he had undertaken some dangerous work for the rescue of wounded men. This was successfully accomplished, but on returning from the first lines the following morning he was wounded by a shell and died the same day.

A colleague on the Headquarters Staff writes of Captain Peto: "He and I worked shoulder to shoulder in some very heavy fighting, and he helped me by his dauntless bravery and coolness under fire to do what I could to follow his example. His first thought was always for the wounded, and he faced any risk to succour them. His example will always remain to me a shining one, though his cheery presence and charming personality are no longer with us."

ARTHUR JOHN WAUGH, B.A. CANTAB., M.R.C.S.,
L.R.C.P. LOND.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain A. J. Waugh, who was killed in action in France about August 18th at the age of 28, was the third son of Mr. and Mrs. Walter Waugh, Chigwell Hall, Essex. He was educated at Forest School, and proceeded to Pembroke College, Cambridge, and afterwards to St. Bartholomew's



Hospital, where he later filled the post of house physician. Subsequently he was appointed resident medical officer at the East London Hospital for Children. He resigned this appointment at the outbreak of war to take a commission in the Royal Army Medical Corps, and was promoted to captain about the middle of 1915. He had been attached to the North Staffordshire Regiment since 1914. He was instantly killed by a 4.2 shell which fell almost at his feet

whilst he was waiting for the relief force. Captain Waugh was buried at Carnoy, and the cross on his grave has been inscribed "Pectore Robur," the Forest School song. The colonel and adjutant of the regiment have written very kind sympathetic letters, and speak most highly of his work, regretting the loss they and the regiment have sustained by the death of their good friend and companion. Captain Waugh was well known in amateur cricketing and football circles.

REGINALD JOSEPH WOOSTER, M.R.C.S. ENG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain R. J. Wooster, who was killed on active service on Sept. 15th, at the age of 29 years, was fifth son of J. Ratliff Wooster, of Ealing. He was educated at St. Paul's School and St. Mary's Hospital Medical School, qualifying in 1911, and then holding in succession three house appointments. He obtained



a commission in the R.A.M.C. after he had entered for the F.R.C.S. examination, and was attached to the Rifle Brigade. After working for some time as a garrison medical officer in France he rejoined a field ambulance. One of his chiefs writes of Captain Wooster that he was an energetic man who knew his work well and who proved a very capable resident medical officer. The facts that he was popular with his colleagues, both in civil and military life, and

that he left behind him a record of ability and industry are noted by more than one correspondent.

J. LISTER GODDARD,

LIEUTENANT, NORFOLK REGIMENT.

Lieutenant J. L. Goddard, who was reported on Sept. 22nd last as wounded and missing and, a little later, as killed, was the third son of Major C. E. Goddard, of Wembley, President of the Recruiting Medical Board for Chelsea, and was himself destined to be a medical man. Educated at St. George's School, Harpenden, he entered University College as a medical student in 1912, and at the outbreak of war, having just completed his second year of study, he obtained a commission in the Norfolk Regiment, with which he saw service in the trenches for more than a year.

CHARLES EDGAR HOLTON SMITH, L.R.C.P. EDIN.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain C. E. H. Smith, who was killed in action in France on Sept. 16th, at the age of 32, was the eldest son of the late Charles Smith, of Milligan Hall, Taunton. He was educated at College Gaillard, Lausanne, the Moravian School at Neuwied-on-Rhine, and at Aberdeen and Edinburgh Universities, and qualified in 1911. At Aberdeen he belonged to a battalion of the Scottish Horse under Lord Tullibardine. After filling resident posts at the East Suffolk Hospital, Ipswich, and acting as second surgeon to the British Red Crescent Hospital in Tripoli during the Italo-Turkish



War, he went into practice in 1912 at High Green, Cannock, Staffs. He joined the R.A.M.C. as a Temporary Lieutenant on Nov. 1st, 1914, and was promoted to Captain a year later.

Captain Smith, as many letters from brother officers testify, was a fearless officer who gave his time and finally his life ungrudgingly for the safety and well-being of the men under his charge. Captain Smith leaves a widow with two small children.

MIDDLESEX HOSPITAL AND THE ARMY MEDICAL SERVICE.—Surgeon-General M. W. Russell, Deputy Director-General of the Army Medical Service, delivered the introductory address at the Medical School of the Middlesex Hospital this year, and took for his subject the historical connexion between the hospital and the Service. This connexion, he pointed out, began well over 100 years ago, when, during the Revolutionary wars in France, from 1789 on, Frenchmen under the displeasure of the governing powers fled for refuge to England. The Middlesex Hospital then, placed at the disposal of some 30 or 40 of these refugees, destitute and broken in health, wards in which they were housed and nurtured. The first great figure in surgery who worked in the Middlesex Hospital and also with the British Army was Sir Charles Bell. Bell, who came to London in 1804, was, we learn from Surgeon-General Russell, working at the Haslar Hospital in 1809 among the sick and wounded of Sir John Moore's army. In 1815 he went to Brussels to tend the wounded of Waterloo, and of his work at that time the museum of the Royal Army Medical College possesses a wonderful memento in the shape of the water-colour sketches of the wounded whom he attended, Bell being, as is well known, a skilled artist. Two other Middlesex surgeons were mentioned especially by Surgeon-General Russell, John W. Hulke and George Lawson. Both had experience of military surgery in the Crimea, Hulke having worked in the hospitals of Smyrna and before Sebastopol, while Lawson shared in the glories of Alma, Inkerman, and Balacava. The Crimea suggests inevitably the name of Florence Nightingale, and it is interesting to note that she had a characteristic association with "the Middlesex," for in May, 1854, she volunteered to give help to cholera patients who were then being admitted to the wards. They were mostly poor foreigners, the victims of a sharp epidemic in Soho. Surgeon-General Russell concluded an address which, though domestic in theme, was of wide interest in treatment, by alluding to the work done at the Middlesex Hospital and all the other large hospitals during the present war, and at the close of the address the dean of the hospital, Dr. H. Campbell Thomson, stated that 340 past and present students of the hospital had gone on active service, of whom 16 had been killed.

INSPECTION OF MOTOR AMBULANCES BY THE KING.—On Oct. 6th the King inspected at Buckingham Palace a convoy of 25 motor ambulances which the Yorkshire miners have presented to the British Red Cross Society and the Order of St. John. This convoy, which has been sent to France, cost about £15,000.

SCOTTISH WOMEN'S HOSPITALS.—News has been received from beyond Odessa of the hospital units sent out to work for the Serbian division of the Russian Army. The journey was uneventful and the reception of the units cordial. Three sections have been arranged—Hospital A, under Dr. Elsie Inglis; Hospital B, under Dr. Lillian Chesney; and a Transport Section.

MEDICAL SERVICE OF THE ROYAL NAVY.—In Part 3, Vol. IX. of the "Times History and Encyclopædia of the War," just issued, price 8d., there is an appreciative sketch of the part which medical science plays in maintaining the health of the navy and, as a consequence, in the successful prosecution of the war. As the writer points out, the tradition of the navy is to keep silence—"Little was heard by the world of the great work which these sea doctors accomplished, of the heroism revealed by them, of the sacrifices which they offered." This work is now made clear, for the problems which beset the Naval Medical Service in the care of the sailor both before and during an action are explained in a way to bring home to everyone the splendid organisation and traditions of service which belong to the medical as to all branches of the Royal Navy. There is included an inspiring account of medical work during the minor actions in the North Sea and in the great encounter of Jutland Bank, and the psychology of the seaman under the strain to which his nerves are subjected by constant watching and the need for preparedness is discussed in a vivid manner. Among the many illustrations are reproductions of portraits of Sir Arthur May, Director-General of the Naval Medical Service in the War, and of Sir James Porter, the late Director-General.

NEW WELSH HOSPITAL FOR WAR CRIPPLES.—The old Cardiff Mansion House has been purchased with the object of establishing an orthopaedic hospital at Cardiff, similar to that which is already doing good work at Rotherhampton. The accommodation has been increased by the gift of two adjoining houses by the James Howell family. An appeal for funds has resulted in a sum of £20,000, Mr. J. P. Cadogan and Mr. W. Percy Miles giving £5000 each, an anonymous donor £7500, and Messrs. Morgan and Co. £2500.

A NEW ARMY DENTAL CAR.—On Oct. 9th the King and Queen inspected at Buckingham Palace a dental surgery car, the first of its kind to be used by the British Army. It contains two operation chairs, a bench and lathe for repair work, water-supply, gas cylinders for operations, and a sterilising plant. It is, in fact, a completely equipped miniature dental hospital on wheels. The car, which has been designed and built by the engineers of the Royal Automobile Club, whose services have been lent to the Red Cross Society, cost approximately £950, the funds having been supplied by the Civil Service Federation.

Mrs. E. M. N. Green, M.B., B.S., was the recipient last Saturday at Buckingham Palace of the V.C. awarded to her late husband, Captain J. Leslie Green.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the First Professional Examination of the Conjoint Board held on Sept. 26th, 27th, 28th, and 29th the following candidates were approved in the undermentioned subjects:—

Chemistry and Physics.—Hawa Khairul-Nissa Attaoullah, London School of Medicine for Women; Gerald Cecil Wootton Curson, Guy's Hospital; William Dabbs, special study; Beatrix Helen Fairbanks, Birmingham University; Ralph Wilfrid Fairfax, King's College; Janet Hughes, South-Western Polytechnic; Aziz Yousif Ibrahim, Beirut and King's College; Violet Ruth Jeffery and Horace Abe Nathan, Birkbeck College; Isaac Resnikoff, King's College; Jacob Seelenfreund, London Hospital; and Mary Agnes Elizabeth Somers, Bristol University.

Chemistry.—All Khan Muzaffar Agha, King's College; Charles Spencer Anderson, St. Mary's Hospital; George Frederick Baxter, King's College; Dudley Hugh Cockell, St. Bartholomew's Hospital; Richard Owen Jones, Liverpool University; Tadmor Ibrahim Makar, Assiut and King's College; and Thomas Ben Thomas, St. Bartholomew's Hospital.

Physics.—Mark Louis Barst and Solomon Blackman, London Hospital; Leslie Charles Frederick Chevens, St. Thomas's Hospital; David Hoole, Manchester University; Gerald Israelstam, London Hospital; Colin Campbell Mackinnon, Middlesex Hospital; Mary Colegrave Pridaux, London School of Medicine for Women; Robert Reisser, University College; Gerald Richmond Anderson de Montjole Rudolf, King's College; Doris Kathleen Shuttleworth, Leeds University; Phillip Abd-El-Malik Sika, King's College; Samuel Snelson, Manchester University; and Daisy Coutts Wallace, St. Andrews and Edinburgh Universities.

Botany.—Mark Louis Barst, London Hospital; Thomas Mace Beattie, Leeds University; Solomon Blackman, London Hospital; Nancy Barbara Daniell, University College; Herbert Davies, Birkbeck College; Reginald Norman Downing, London Hospital; Ralph Martin Baland, Bristol University; Ralph Wilfrid Fairfax, King's College; Sophie Elizabeth Hymans-de-Tiel and Violet Ruth Jeffery, Birkbeck College; Evan Thomas Lloyd, Guy's Hospital; Tadmor Ibrahim Makar and Daniell Maximos, King's College; Edmund Philbin, Manchester University; Gerald Richmond Anderson de Montjole Rudolf, King's College; Joseph Solomonoff, London Hospital; and Leslie James Timings, Birmingham University.

At the Second Examination in Anatomy and Physiology held on Sept. 28th and 29th and Oct. 2nd 50 candidates presented themselves, of whom 30 were approved and 20 were rejected. The following are the names and schools of the successful candidates:—

Itamaro Balchruشنا Agaskar, Bombay University and Middlesex Hospital; Frederick Thomas Allen, St. Thomas's Hospital; Maurice Aronsohn, London Hospital; Sidney Thomas Barrett, Cambridge University; Charles Sidney Bluemel, University of Colorado; Moshek Zelmanovitch Bochenek, London Hospital; Gerald Arthur Augustine Bradnack, Guy's Hospital; Percy James Briggs, Cambridge University and Guy's Hospital; Benjamin Young Harper Christmas, Middlesex Hospital; Ignatius Joseph Cruchley, London Hospital; John Griffith Edwards, King's College; Clarence Franklin Eminson, Charing Cross Hospital; Denis Paul Gullfoyle, St. Bartholomew's Hospital; Reginald Jenner-Clarke, London Hospital; Francis William Kemp, Charing Cross Hospital and King's College; John Kendall, Guy's Hospital; Wright Lambert, Middlesex Hospital; Tudor David Llewellyn, University College, Cardiff; Maurice Marcus, London Hospital; Kenneth Mullen, Bombay University and Guy's Hospital; Thomas

Reed, Guy's Hospital; Rowan William Revell, University College; Herbert Leyland Sackett, St. Bartholomew's Hospital; Adolph Sebba, London Hospital; Cecil George Douglas Siggs, Guy's Hospital; Jacques Spira, Brussels University and King's College; Abbas Hilmy Talaat, Middlesex Hospital; Arthur Walford Taylor and Noel Sydney Bailey Vintner, St. Bartholomew's Hospital; and David Hardy Williams, London Hospital.

ROYAL COLLEGE OF SURGEONS OF ENGLAND: LECTURES AND MUSEUM DEMONSTRATIONS.—The demonstrations to be given in the theatre of the Royal College of Surgeons of England in Lincoln's Inn-fields during October will be open not only to practitioners but to medical students and first-aid and ambulance students, dental students being specially invited to attend Mr. Colyer's demonstrations. The course is as follows:—Monday, Oct. 16th, at 5 P.M.: Mr. S. G. Shattock, Wounds and their Repair; Wednesday, Oct. 18th, at 5.30 P.M.: Mr. J. F. Colyer, Fractures of the Jaw; Monday, Oct. 23rd, at 5 P.M.: Mr. S. G. Shattock, Wounds and their Repair; Wednesday, Oct. 25th, at 5.30 P.M.: Mr. J. F. Colyer, Fractures of the Jaw; and Monday, Oct. 30th, at 5 P.M.: Mr. S. G. Shattock, Injuries of Arteries.

In November the first series of a course of lectures on the Anatomy of the Human Body will be delivered by Professor Arthur Keith, Conservator of the Museum, during the afternoons of November, at 5 P.M., in the theatre of the College. This course is intended for first-aid and ambulance students, and is as follows:—Lecture I., Wednesday, Nov. 1st: The Heart and Great Vessels; Lecture II., Friday, Nov. 3rd: The More Common Sites of Hemorrhage; Lecture III., Monday, Nov. 6th: The Lungs and Trachea; Lecture IV., Wednesday, Nov. 8th: Respiration; Lecture V., Friday, Nov. 10th: The Brain; Lecture VI., Monday, Nov. 13th: The Spinal Cord and Nerves; Lecture VII., Wednesday, Nov. 15th: The Structures concerned in Shock; Lecture VIII., Friday, Nov. 17th: The Anatomy of Wounds received in Warfare; Lecture IX., Monday, Nov. 20th: The Structures concerned in the Spread of Infections; Lecture X., Wednesday, Nov. 22nd: The Anatomy of the Ear and Skull; Lecture XI., Friday, Nov. 24th: The More Common Accidents to the Eye and Ear; Lecture XII., Monday, Nov. 27th: The Skin and Mucous Membranes—the more common accidents to which they are exposed. Anatomical preparations and specimens, used for purposes of illustration, will be placed on exhibition in the theatre from 3 to 5 P.M. on each lecture-day. On the following day the same preparations will be placed in the hall of the museum, where they may be studied between the hours of 10 A.M. and 5 P.M.

A second series of lectures will be given in January and February, 1917.

At the First Professional Examination for the Licence in Dental Surgery, held on Sept. 29th and 30th, the following candidates were approved in the undermentioned subjects:—

Mechanical Dentistry and Dental Metallurgy.—Herbert Oliver Holmes and Frederick Laurence King, Guy's Hospital; Cecil Frank Long, Bristol University; John Matley-Moore, Birmingham University; and William Wallace Harold Truscott and Richard Murray Underwood, Guy's Hospital.

Mechanical Dentistry.—Alexander Benjamin Aldred, Arthur Frederick Bartle, and Alan Raymond Cox, Guy's Hospital; Iris Elizabeth Gardiner, National Dental Hospital; Myer Ginsberg, Alwyn Norman Goudge, and Allistair Hyland, Grieve, Guy's Hospital; Thomas Edward Hoggins, Birmingham University; John James, Guy's Hospital; Scholam, Meyerovitch Kropman, London Hospital; Helen Pattie Clara Mayo, National Dental Hospital; Alan Lethaby Morgan, Bristol University; Ernest Albert Nunn and Cornelia Hermanus Olivier, Royal Dental Hospital; William Goodwin Senior, Leeds University; and Stanley Ethelbert Tweney, Guy's Hospital.

Dental Metallurgy.—Christopher Egbert George Busbridge, National Dental Hospital; Lillian Forbes, National Dental Hospital; Hugh Donald Hoggard and Joseph Lauer, Royal Dental Hospital; Margherita Maria Lorez and Mary Jane Ripley, National Dental Hospital; Sidney Stamp, Royal Dental Hospital; Enid Walker, National Dental Hospital; and James Andrew Whittle, Royal Dental Hospital.

At the Preliminary Science Examination for the Licence in Dental Surgery, held on Sept. 26th, 28th, and 29th, the following candidates were approved in the undermentioned subjects:—

Chemistry and Physics.—Gwilym Wynne Griffith, University College, Bangor; and Christoffel Albertus Marais, Guy's Hospital.

Physics.—John William Kewley Cain, Douglas Eastern District Secondary School; Jamshed Bejurjee Chenoy, Royal Dental Hospital; Reginald Gwynne Griffiths and Harold James Lyon, Guy's Hospital; and John Christopher Leslie Phillips, University College, Cardiff.

Chemistry.—William Leslie Cooper Jones, Liverpool University.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates were successful:—

PRIMARY EXAMINATION, PART II.

Anatomy.—H. M. Brown, Guy's Hospital; W. R. Carling, Cambridge and Guy's Hospital; S. M. Cohen, Cardiff; K. M. K. Duff, Guy's Hospital; F. E. Edwards, Manchester; B. E. D. Gray, Guy's Hospital; F. B. Hobbs, Cambridge; T. James, St. Bartholomew's Hospital; T. A. Jordan and J. N. Laing, Manchester; G. L. Levin,

King's College; F. Lyth and H. Lyth, Manchester; S. F. Mahmood, Cardiff; M. Marcus, London Hospital; J. E. B. Morton, Oxford; S. K. Rigg, Bristol; H. N. Schapiro, Guy's Hospital; H. H. Sellm, St. Mary's Hospital; G. M. Trist, Charing Cross and King's College; D. H. Williams, London Hospital; and J. Yates, Manchester.

Physiology.—H. M. Brown, Guy's Hospital; W. R. Carling, Cambridge and Guy's Hospital; S. M. Cohen, Cardiff; K. M. K. Duff, Guy's Hospital; F. E. Edwards, T. A. Jordan, and J. N. Laing, Manchester; G. L. Levin, King's College; F. Lyth, Manchester; S. F. Mahmood, Cardiff; M. Marcus, London Hospital; J. E. B. Morton, Oxford; H. N. Schapiro, Guy's Hospital; T. C. Stephen, Manchester; and D. H. Williams, London Hospital.

UNIVERSITY OF GLASGOW.—At the Fourth Professional Examination for the Degrees of M.B. and Ch.B. the following candidates were successful:—

Joseph Edward Bannen, James Beveridge, Alexander George Brand, Henry Drummond Brown, William Moore Cameron, Allan La Barte Clark, David Clvde, Ann Kelly Cormack, James Orerar, Robert Cunningham, William Donald, George Mundell Hetherington, Arthur Robert Hill, Tom John Honeyman, James Neil Jamieson, Stewart Johnstone, Margaret Jane Thorburn Leitch, Hugh Ernest M'Coll (distinction in Surgery and Clinical Surgery), James MacAllister Mackintosh (distinction in Midwifery), Helen Young Murdock (distinction in Medicine and Clinical Medicine), David Bell Robertson, James Steel, John Stirling, Herbert Watt Torrance, Robert Nisbet Walker, and Alison Edgar Wilson.

Ernest M'Murchie Dunlop, who graduated on July 19th and is now on active service, gains the Brunton Memorial Prize of £10, awarded to the most distinguished graduate in medicine of the year.

KITCHENER NATIONAL MEMORIAL FUND.—A flag day has been fixed for Nov. 7th to be known as "Roll of Honour" Day, and the proceeds are to be devoted to the Lord Kitchener National Memorial Fund. Preparations have already progressed sufficiently throughout the country to justify the council of the fund in anticipating a generous response. The fund, which has for its president Queen Alexandra, has even now accomplished much along the lines on which it was established. It perpetuates the memory of Lord Kitchener in a manner that would assuredly have met with that distinguished soldier's heartiest approval. The main object is to make provision in the time of direst need for officers and men of the Army and Navy who have suffered total disablement. The Council has already dealt with many cases, and wheel-chairs, hand tricycles, special beds, attendants for the paralysed, and means of facilitating locomotion or alleviating suffering have been provided with promptitude, thanks to a generous gift from Mr. Fenwick Harrison of £50,000. The objects which the council has in view are: To equip and endow for all time a home for disabled officers. To establish a permanent fund for relieving disabled officers and men in their own homes. Scholarships are also to be founded for the sons of deceased and disabled officers, and for young men between 18 and 25 who have served with the forces. The organisation is in the hands of Miss C. May Beaman, who will welcome offers of assistance addressed to 10, West Bolton-gardens, London, S.W.

ROYAL VICTORIA HOSPITAL, BELFAST.—Like other charitable institutions, this hospital is faced at present with a rapidly rising expenditure, and an appeal urging the need for increased support has been issued by the board of management. The reasons for this increased expenditure are: increase of patients, the influence of the war (in the rise in price of food, drugs, dressings, &c.), and the greater cost of modern medical and surgical treatment. The cost of coal before the war was about £1000 annually; this year it will amount to almost £3000. Formerly each patient on an average cost little over £60 in the year, now it is more than £80, and the sum is still rising. As it is feared that this year there will be a deficiency of between £4000 and £5000 in the working expenses of the hospital, a strong subcommittee of the board of management has been appointed to look into the matter, and the general feeling is that what is needed is a larger number of annual subscribers, and also more subscriptions from the working classes, who in a great industrial centre like Belfast—whose population now exceeds 400,000—benefits much by such an institution.

THE LATE DR. ALEXANDER BALLANTYNE.—Dr. Alexander Ballantyne, one of the oldest practitioners in Midlothian, passed away at his house, Orfordholme, Gullane, on Oct. 3rd, in his eightieth year. A native of Chorley, Lancs, he had a distinguished career as a student at Edinburgh University, and after graduation he studied at Berlin and Vienna. He then settled down to practise at Dalkeith, and held a large and important practice in that locality for nearly half a century. Dr. Ballantyne was medical officer of health for many years of the Burgh of Dalkeith, and also the visiting physician to the Dalkeith Combination Poorhouse. He was a Fellow of the Royal College of Physicians and had been President of the Obstetrical and Harveian Societies. He was on the commission of the peace for Midlothian. He leaves a widow and two sons; the elder, Mr. John A. Ballantyne, is

resident at Carlisle, and the younger is Dr. Harold S. Ballantyne. In January of last year Dr. Ballantyne's youngest son, Commander Ernest O. Ballantyne, R.N., lost his life when H.M.S. *Viknoe* foundered. Dr. Ballantyne will be much missed by a large circle of friends and members of the profession, by whom he was much esteemed and beloved. An old friend writes: "But it was not merely in his professional line he was appreciated. The personality of his wonderful bonhomie and kindly sympathetic nature brought him friends wherever he showed himself, and no doubt this was one of the secrets of his successful practice, as his cheery smile did as much to stimulate his patients as the best considered of prescriptions. In his private life he had an intense appreciation of music, and his great broad-mindedness and refinement of feeling made his conversation interesting on every subject. In every walk of life which he touched he gained many friends, and his loss is one which will be felt far and wide."

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.—The two Goldsmid Entrance Exhibitions, offered annually for competition in September, were awarded this year to G. V. W. Anderson, of University College, London, and A. W. Holgate, of Alwyn's School and University College, London.

THE LATE DR. OLIVE CLAYDON.—Miss Olive Claydon, M.D., B.S. Lond., who died at Oldham on Oct. 5th, had an extensive practice there, and was secretary of the Panel Doctors' Association. Outside medicine she took an active part in public life.

GREAT NORTHERN CENTRAL HOSPITAL.—A meeting is to be held in the Mansion House on St. Luke's Day, Wednesday, Oct. 18th, at 3 P.M., on behalf of the Great Northern Central Hospital, Holloway, N., in celebration of the Diamond Jubilee of the institution.

EDINBURGH UNIVERSITY: THE ADMISSION OF WOMEN STUDENTS.—During the last medical session 172 women were attending the extra-mural classes. It is understood that the large majority of these will now take advantage of admission recently granted to the medical classes of the University. No new accommodation needs to be provided at present, as some 500 men students are away serving with the Forces. The University Court is not providing women with facilities for clinical instruction in the coming year, and practical work will, as heretofore, have to be obtained outside the University in the extra-mural school of the Royal Colleges.

ILLEGAL SALE OF COCAINE: HEAVY FINE IMPOSED.—At Bow-street last week two qualified chemists were charged with unlawfully selling cocaine to a man who was found by the police lying unconscious on his bedroom floor in a London hotel. On removal to the Royal Free Hospital the man was found to be suffering from advanced cocaine poisoning. The police discovered three boxes, each of which contained cocaine in tablet form as well as cocaine in solution and a hypodermic needle. No doctor's prescription was found, and the chemist admitted having supplied the drug to an old customer without one. The stipendiary said he had considerable doubt whether he ought not to send the more responsible defendant to prison. He imposed fines of £100, with costs, in the one case, and £10 10s., with costs, in the other.

THE LATE DR. BERNARD SORMANI.—Bernard Sormani, whose death is announced from Amsterdam at the early age of 35 years, had already made his mark in bacteriology and serology. His training was received in the pathological laboratory of Professor Rotgans at Amsterdam, where he began to show the logical understanding and technical skill which were the characteristics of his later work. After his appointment as pathological director of the Onze-lieve-Vrouwe Hospital, he published a paper on a method of determining the quantity of syphilitic antigen in the blood or liquor, and developed this work to a high level. A visit to England made him a keen disciple of Sir Almroth Wright's bacteriotropic methods, and he did original work on the prophylactic vaccination against hay fever, an account of which appeared in *THE LANCET* of Feb. 12th, 1916. His aim to secure the foundation in Amsterdam of an institute akin to that of v. Behring at Marburg was on the road to realisation when his life was cut short by an acute streptococcus infection acquired during his work.

The death occurred at Oxford on Oct. 9th of Mr. Horace Hart, M.A., for many years controller of the Oxford University Press. He was the author of the well-known "Rules for Compositors and Readers," now in its twenty-third edition, originally intended for the staff of the Clarendon Press, but now enjoying much greater publicity.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

CROSS, W. FOSTER, M.R.C.S., L.R.C.P. Lond., has been appointed Senior Administrator of Anæsthetics to St. Bartholomew's Hospital. GALLOWAY, R. P. R., MCILLWAIN, A. L., MOON, C. R. C., NORMAN, J. M., and TYRRELL, J., Resident Physicians to the Royal Infirmary, Edinburgh.

GARRERTSON, W. T., M.D., and HOLBOROW, E. R., M.B., B.S. Lond., Clinical Assistants to the Royal Infirmary, Edinburgh.

HADFIELD, J. A., LAMONT, J. L., MATHEWSON, W. R., MILLER, R. W. N., M.B., Ch.B., STUMP, C. W., and WHITE, H. P. W., M.B., Ch.B. Edin., Resident Surgeons to the Royal Infirmary, Edinburgh.

LITHGOW, J. D., M.B., C.M. Edin., Assistant Surgeon to the Ear and Throat Department of the Royal Infirmary, Edinburgh (re-elected).

SHONE, F. C., L.M.S.S.A. Lond., Certifying Surgeon under the Factory and Workshops Acts for the Walthamstow District of the county of Essex.

THOMAS, Mrs. FRANK, M.B., Ch.B. Edin., has been appointed Supervisor of the Swansea Eye Clinic by the Swansea Education Committee.

Certifying Surgeons under the Factory and Workshop Acts: COAKER, F. W. J., M.R.C.S., L.R.C.P. Lond. (Bromsgrove, Worcester), JACKSON, J. P., M.B., B.S. Durh. (Millom, Cumberland), SIBBALD, B. I. G., M.B., C.M. Edin. (Crewkerne, Somerset), and WILLIAMS, W. M., L.R.C.P. & S. Edin., L.F.P.S. Glasg. (Clwytybont, Carnarvon).

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

ASETON-UNDER-LYNE DISTRICT INFIRMARY AND CHILDREN'S HOSPITAL. —Assistant House Surgeon. Salary £120 per annum.

BEDFORD COUNTY HOSPITAL.—Assistant House Surgeon, unmarried. Salary £150 per annum, with board, &c.

BIRMINGHAM, LITTLE BROMWICH FEVER HOSPITAL.—Female Assistant Medical Officer. Salary £300 per annum, with board, &c.

BRISTOL, CLIFTON DISPENSARY, Dowry-square.—Resident Medical Officer. Salary £200 per annum and furnished house.

BRISTOL ROYAL INFIRMARY.—House Physician. Salary at rate of £120 per annum, with board, &c.

CARDIFF, KING EDWARD VII.'S HOSPITAL.—House Surgeon for six months. Also Fourth-year Student Dresser for three months.

Salary at rate of 52 guineas per annum, with board, &c.

DENBIGHSHIRE COUNTY COUNCIL.—Female Assistant Medical Officer of Health. Salary £350 per annum.

DORSET COUNTY COUNCIL EDUCATION COMMITTEE.—School Dentist. Salary £250 per annum.

EWELINA HOSPITAL FOR CHILDREN, Southwark, S.E.—House Physician. Salary at rate of £160 per annum, with board, &c.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas.

ITALIAN HOSPITAL.—House Surgeon for six months. Salary £80 per annum, with board, &c.

LEEDS PUBLIC DISPENSARY.—Female Resident Medical Officer. Salary £200 per annum, with board, &c.

LEICESTER ROYAL INFIRMARY.—Pathologist to Infirmary and Venereal Diseases Section. Salary at rate of £400 per annum. Also Medical Officers in Charge of Clinics and Beds. Salary £200 for Male Officer and £150 for Female Officer.

LONDON LOCK HOSPITAL (MALE), Dean-street, Soho, W.—House Surgeon for six months. Salary at rate of £150 per annum.

MANCHESTER ROYAL INFIRMARY CONVALESCENT HOSPITAL, Cheate.—Resident Medical Officer, unmarried. Salary £225 per annum, with board, &c.

MANCHESTER, ST. MARY'S HOSPITALS FOR WOMEN AND CHILDREN.—Resident Surgical Officer. Salary at rate of £150 per annum, with board, &c.

NEWCASTLE-UPON-TYNE, ROYAL VICTORIA INFIRMARY.—Four House Physicians, Four House Surgeons, Accident Room House Surgeon, House Surgeon to Aural and Ophthalmic Departments, House Surgeon to Skin and Gynecological Departments, and House Surgeon to Out-patient Dressing Department.

NOTTINGHAM GENERAL HOSPITAL.—Two House Physicians and One Assistant House Surgeon for six months. Salary at rate of £250 per annum each, with board, &c.

PADINGTON GREEN CHILDREN'S HOSPITAL, W.—House Physician.—House Surgeon for six months. Salary at rate of £80 per annum.

PLYMOUTH BOROUGH.—Assistant Medical Officer of Health. Salary £350 per annum.

PRESTON, LANCAS. COUNTY ASYLUM, Whittingham.—Local Tenens, unmarried. Salary £77s. per week, with board, &c.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Assistant Resident Medical Officer for four months. Salary at rate of £80 per annum, with board, &c.

SAMARITAN FREE HOSPITAL FOR WOMEN, Marylebone-road, N.W.—House Surgeon for six months.

SHEFFIELD, ROYAL INFIRMARY.—Two House Surgeons. Salary £100 per annum, with board, &c.

SOUTH LONDON HOSPITAL FOR WOMEN, 103, South Side, Clapham Common, S.W.—Female House Physician and House Surgeon for six months.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—House Physician. Salary £150 per annum, with board, &c.

STAFFORDSHIRE EDUCATION COMMITTEE.—Two Permanent and Four Temporary Female Assistant School Medical Inspectors. Salary £300 per annum.

SUNDERLAND ROYAL INFIRMARY, CHILDREN'S HOSPITAL.—Resident Medical Officer for six months. Salary £150 per annum, with board, &c.

WALSALL AND DISTRICT HOSPITAL.—Assistant House Surgeon and Anaesthetist. Salary £150 per annum, with board, &c.

WEST HAM UNION INFIRMARY, Whipps Cross-road, Leytonstone, N.E.—Resident Assistant Medical Officer for period of the War. Salary £300 per annum, with usual residential allowances.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Clacton-on-Sea.

Births, Marriages, and Deaths.

BIRTHS.

ADAMS.—Oct. 4th, at Prince's-gate, W., the wife of Surgeon J. Wroth Adams R.N., of a daughter.

CATES.—On Oct. 11th, at Laurel Mount, St. Helens, the wife of Joseph Cates, M.D., D.P.H., of a son.

FINN.—On Oct. 4th, at Blenheim-gardens, Willesden Green, to Allan Finn, M.D., F.R.C.S., Temporary Captain, R.A.M.C., and Mrs. Allan Finn—a daughter.

FORREST.—On Oct. 4th, at Whitwell-road, Southsea, the wife of Fleet-Surgeon J. A. Forrest, of a daughter.

KEIR.—On Oct. 6th, at Beana-cra, Melksham, Wilts, the wife of Captain Ivan Keir, R.A.M.C., of a daughter.

MACFARLANE.—On Oct. 6th, at Pembroke-gardens, W., to the wife of Dr. W. F. Macfarlane, W.A.M.S.—a daughter.

MARRIAGES.

PANTER—SAUNDERS.—Oct. 3rd, at All Souls' Church, South Hampstead, N.W., Surgeon Arthur Edward Panter, R.N., M.R.C.S., to Isobel, only daughter of Mr. and Mrs. William Mill Saunders, Stroyila, Radlett, Herts.

PATERSON—BROTHERSTON.—On Oct. 4th, in Edinburgh, Captain Robert McChayne Paterson, R.A.M.C., to Caroline, third daughter of Robert P. Brotherston, Tynningham, Prestonkirk.

DEATHS.

BOUSTEAD.—On Oct. 8th, at Adelaide-crescent, Hove, Brighton, Lieutenant-Colonel Robinson Boustead, I.M.S., aged 81 years.

BOYD.—On Oct. 6th, at Richmond, John Stewart Boyd, L.R.C.P., L.R.C.S., L.F.P.S.

BROWN.—On Oct. 6th, at Westminster Hospital, S.W., Ralph Brown, M.D., Assistant Medical Superintendent of Bethlem Royal Hospital, S.E., aged 36 years.

CHAWNER.—On Oct. 5th, at Hill House, Clay Cross, Derbyshire, Alfred Chawner, M.R.C.S., L.R.C.P., aged 63 years.

HAMILTON.—On Oct. 7th, suddenly, at Elm House, Hawick, John Rogers Hamilton, M.D., aged 53 years.

INGRAM.—Killed, on or about the night of Sept. 16th, while out searching for wounded in front of the enemy wire, Captain Thomas Lewis Ingram, D.S.O., M.C., R.A.M.C. (attached to King's Shropshire L.I.).

LANGLEY.—On Oct. 3rd, Aaron C. Langley, L.R.C.P., &c., of Cald, Streatham Common North, S.W., in his 71st year.

MACINDOE.—On Oct. 5th, at Morton, Torrington, North Devon, James Gray Macindoe, M.B., late Major, R.A.M.C. (T.) aged 47 years.

MEREDITH.—On Oct. 5th, at Little Massingham Manor, Norfolk, the result of an accident, William Appleton Meredith, J.P., F.R.C.S., in his 69th year.

SWALLOW.—On Oct. 7th, at The Limes, Walthamstow, Norman Heales Swallow, L.D.S., aged 34 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

BALE, JOHN, SONS, AND DANIELSSON, London.

Acute Poliomyelitis (Lumleian Lectures, 1916). By F. E. Batten, M.D. Cantab., F.R.C.P.

First Principles in Therapeutics. By Giles Forward Goldsborough, M.D. Price 7s. 6d. net.

BLACK, A. AND C., London.

Diseases of Children. By A. Dingwall-Fordyce, M.D., Ch.B., F.R.C.P.E. Price 10s. 6d. net.

CHURCHILL, J. AND A., London.

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A Primer of Tropical Hygiene. Revised and enlarged. By Colonel R. J. Blackham, C.I.E., R.A.M.C. Third edition. Price 12 annas.

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Notes, Short Comments, and Answers to Correspondents.

THE EVENING STOOL.

To the Editor of THE LANCET.

SIR,—In addition to those adduced by "Personal Experience" in your issue of Oct. 7th, there are other reasons in favour of the evening stool. One is important, especially to bad sleepers. The most favourable bodily condition for sleep is that the upper part of the alimentary canal should be well filled. After food, sleep, is the rule throughout the animal kingdom, and is exemplified in all but those herbivorous animals that, in a state of nature, eat almost continuously. But it is scarcely less important that the lower part of the canal should be empty. Before starting on the perilous course of administering hypnotics, the plan of securing an evacuation in the evening should always be tried. It will often render the administration of hypnotics unnecessary.

I am, Sir, yours faithfully,
CHAS. A. MERCIER.

Oct. 10th, 1916.

To the Editor of THE LANCET.

SIR,—I am glad that "Personal Experience" has called the attention of the readers of your journal (Oct. 7th, p. 663) to this important subject. I have been in the habit of impressing on my patients the necessity of regular evacuations—viz., the first thing in the morning before the bath, which answers two purposes, the washing of the anus and the evacuation of the bowels, and the last thing at night before retiring for the night, so as to have no poisonous matter remaining in the bowels during the night hours.

To refer to another subject mentioned in THE LANCET last week, some time ago I was consulted by a sufferer from angio-neurotic oedema who had been under the treatment of several medical men without relief. The case of "Major, R.A.M.C. (T.F.)," who asked for advice from his fellow practitioners in your columns, appears to be a facsimile of the one I treated successfully. I ordered my patient a brisk purge with a saline mixture, followed up by palatinoids of potassium permanganate to be taken three times a day. After the second day my patient was better, and in a week he was cured and has had no return of the rash.

I am, Sir, yours faithfully,
J. BRINDLEY-JAMES, L.R.C.P.I., M.R.C.S. Eng.
Physician to St. Mary's Training College, Brook Green, W.
Oct. 9th, 1916.

ETYMOLOGY OF THE TERM "BOCHE."

To the Editor of THE LANCET.

SIR,—The suggestion made by Dr. H. Kerr in THE LANCET of Sept. 23rd that the origin of the term "boche" may be the word "botch" or its variant spelling "boche," meaning a "swelling," probably has some foundation. In THE LANCET of Jan. 29th, 1916, on the shape of heads, it is stated that "boche" is slang for "blockhead." They are closely connected; for the "swelling" was the "boss"; in French, "bosse"; in old French "boce"; meaning also a "knob" or "head." Boce and boche are also in Chaucer. By some it is thought to be an abbreviation of French "Caboché" (Latin, Caput), a blockhead. Anyhow, there is strong evidence that it means head or "hard head." Long ago the Germans were called "têtes-carrées," square heads. To name soldiers by their heads and headresses is natural. Cromwell's soldiers were called "Roundheads." "Alboche" has also been used in French. This is no doubt a combination of "Allemand" and "boche." The meaning of "head" clings to the word "boche." The French expression "tête de boche" means "a hard-headed fool"; "a German"; also a "rake" or profligate. (See Dictionary of Argot or French and English Slang by W. von Knoblauch, published by Routledge, London.)

Dr. Kerr suggests that to call a man a "boche" is equivalent to calling him a "bubo." Although this is said by lexicographers to be derived from Greek *Boubon*, the groin, in the old French-English dictionary of Boyer (before 1729) it is spelt "Bobo," and the meaning is a "swelling." This seems more like English "Bob," a knob or swelling, or "cluster"; or it may well be connected closely with Spanish and Portuguese "Bobo," meaning "Blockhead," and English "booby." This will be seen by referring to Diaz's well-known dictionary of the Romance languages; and he suggests that it means "Balbo," which means "stammerer" (Latin—balbutire, to stutter). A "foreigner" in more than one tongue was called either "a dumb man" or "a stutterer" because he could either not speak the home tongue at all or could only stammer it, and therefore he was a "blockhead." It will be seen that this is an alternative explanation to that of imputing the origin of the word to the consideration of the shape of the head.

I am, Sir, yours faithfully,
W.

Sept. 30th, 1916.

ANGIO-NEUROTIC OEDEMA.

To the Editor of THE LANCET.

SIR,—I have read with much interest the letter from "Major, R.A.M.C. (T.F.)," in THE LANCET of Oct. 7th. A similar case came under my notice a few weeks ago. It is obvious these cases are very difficult to treat. Personally I use continuous counter irritation in dealing with such, basing my practice on the theory that the chief underlying cause is microbial. The treatment tends to reduce the number and virulence of micro-organisms in the system. The form I would recommend is multiple superficial acupuncture followed by an irritant, and I should be glad to give your correspondent full particulars.

I am, Sir, yours faithfully,

Bournemouth, Oct. 9th, 1916.

W. J. MIDDLETON.

To the Editor of THE LANCET.

SIR,—In an article by Dr. A. J. Whiting on this subject, published in THE LANCET some three years ago the value of thyroid extract in these cases was pointed out.

There is evidence in the literature of the subject that the treatment has been successful.

I am, Sir, yours faithfully,

Oct. 10th, 1916.

M.R.C.S.

To the Editor of THE LANCET.

SIR,—In answer to the letter of "Major, R.A.M.C. T.F." in your last issue, I suppose that he has tried calcium and intestinal disinfectants.

I had a very obstinate case in private till recently. The patient had severe giant urticaria after any form of exercise or moderate work. This had lasted for years, and numerous medical advisers, general and special, had attempted its cure without any improvement. The patient was advised total abstinence from tea and coffee. The result was instantaneous and complete relief, even after heavy exercise. Cocoa was allowed in moderation.

I am, Sir, yours faithfully,

Oct. 16th, 1916.

R.A.M.C.

THE NEW LIGHTING ORDER.

ACCORDING to the new Lighting Order, which came into force recently in the Metropolitan Police district, lights in London must, from Monday next, Oct. 16th, until the end of the month, be obscured at 5.30 P.M. until one hour before sunrise. The Order applies to the City of London and the whole of the Metropolitan Police district, with the exception of the provisions relating to blinds in railway carriages and lights on vehicles. From Nov. 1st the hour will be 5 P.M.

Digitalis.—The circumstances must indeed be rare in which a hypodermic syringe cannot be sterilised by Wright's simple method. If it is impossible to apply heat it is sufficient to fill the syringe with acid carbolic liq. for 24 hours. Probably most of those who constantly use syringes for injection purposes do not frequently re-sterilise them. A syringe which has been autoclaved when new, and is washed out after use with 1 in 20 carbolic, sterile water, or even freshly drawn tap water, is very unlikely to convey infection. The needle, if of platinum-iridium, can be flamed each time before use. These precautions appear to be sufficient even in bacteriological work. Of course, we are not referring to the use of a syringe for exploration purposes, but assume that nothing but sterile liquid is drawn up into it.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Thursday, Oct. 19th.

DERMATOLOGY (Hon. Secretaries—J. E. R. McDonagh, Henry MacCormac): at 5 P.M.

Exhibition of Cases (at 4.30 P.M.).

Cases and Specimens:

Dr. A. Whitfield: Specimen of Acarus and Run from a Kitten, with Notes on Human Infection derived therefrom.

Dr. Pernet: (1) Sceleroderma; (2) Primary Syphilis of Lip in a Woman.

Dr. H. G. Adamson: Rodent Ulcer of Unusual Type and Distribution.

Friday, Oct. 20th.

ELECTRO-THERAPEUTICS (Hon. Secretaries—E. P. Cumberbatch, Robert Knox).

CLINICAL EVENING (at 8.30 P.M.).

Members who desire to make communications, show cases, or to exhibit instruments, diagrams, &c., are requested to give notice to Dr. Cumberbatch (15, Upper Wimpole-street, W.) immediately.

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY.—4.30 P.M., Presidential Address. Cases sent for Consultation.

Demonstration of Pathological Specimens. 5 P.M.

Exhibition of Clinical Cases by Dr. W. K. Stibley, Captain W. Griffith, Dr. J. L. Bunch, Dr. C. Kempster, Mr. C. H. Mills,

and Dr. M. Dockrell.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover-square, W.

WEDNESDAY.—8 P.M., Paper:—Helen P. Go. drich, D.Sc., and M. Moseley: On Certain Parasites of the Mouth in Cases of Pyorrhea. Exhibition of Specimens of V. Ivocaceae.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

FRIDAY.—5.30 P.M., Paper:—Dr. A. Macdonald: The Position of Malaria in Sanitary Administration. Followed by a discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

WEDNESDAY—4 P.M., Harveian Oration:—Sir Thomas Barlow.

POST-GRADUATE COLLEGE, West London Hospital, Hammer-smith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynaecological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipple); Gynaecological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. E. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipple); Eye Out-patients (Mr. R. F. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. F. Brooks).

THURSDAY.—2.30 P.M., Gynaecological Operations (Dr. A. E. Gilles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. E. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. F. Brooks).

METEOROLOGICAL READINGS.

(Taken daily at 9.30 a.m. by Stevenson's instruments.)

THE LANCET Office, Oct. 11th, 1916.

| Date. | Barometer reduced to Sea Level and 32° F. | Direction of Wind. | Rate-fall. | Solar Radio in Vacuo. | Maximum Temp. in Shade. | Min. Temp. | Wet Bulb. | Dry Bulb. | Remarks. |
|--------|---|--------------------|------------|-----------------------|-------------------------|------------|-----------|-----------|----------|
| Oct. 5 | 29.790 | W. | 0.04 | 110 | 69 | 59 | 59 | 62 | Cloudy |
| " 6 | 29.800 | S.W. | ... | 73 | 64 | 62 | 61 | 63 | Overcast |
| " 7 | 29.816 | S.W. | ... | 105 | 65 | 56 | 53 | 57 | Cloudy |
| " 8 | 29.969 | S.W. | ... | 90 | 66 | 55 | 57 | 59 | Cloudy |
| " 9 | 30.026 | S. | 0.06 | 85 | 67 | 58 | 57 | 60 | Cloudy |
| " 10 | 30.060 | S. | ... | 90 | 65 | 57 | 58 | 60 | Overcast |
| " 11 | 30.100 | S.W. | ... | 83 | 66 | 59 | 57 | 60 | Cloudy |

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- N.—North Lonsdale Hospital, Barrow-in-Furness, Secretary of.
- O.—Lieutenant T. N. Oliver, R.A.M.C.
- P.—Captain E. A. Peters, R.A.M.C.; Dr. L. C. Panting, Truro; Lieutenant C. E. Proctor, R.A.M.C.
- Q.—Quantock Vale Cider Co., North Petherton.
- R.—Dr. M. J. Ryan, Crumlin; Dr. R. J. Ryle, Brighton; Captain F. W. Ramsden.
- S.—Dr. B. Sinclair, Lond.; S. Chetwynd-road; Messrs. Swets and Zettlinger, Amsterdam; Messrs. Spiers and Pond, Lond.; Messrs. Seward, Baker, and Co., Lond.; South Eastern Mounted Brigade Field Ambulance, O.C.; Captain A. F. S. Sladden, R.A.M.C.
- T.—Dr. F. W. Tunncliffe, Lond.; Mr. F. J. Tanner, Bournemouth; Tunbridge Wells General Hospital, Secretary of.
- V.—Dr. H. Viets, Oxford.
- W.—Messrs. J. Woodhead and Sons, Huddersfield; Woodhall Spa Co., Woodhall Spa, Secretary of; Miss A. E. Wigan, Luddersdown; Dr. F. T. Wilson, Stonebroom; Mr. R. L. Wason, Okehampton; Mr. F. Wilson, Lond.; Dr. L. White, Mossley.

An Address

ON

THE SPIRIT OF MEDICINE.¹

By J. MITCHELL BRUCE, M.A., LL.D.,
M.D. LOND., F.R.C.P. LOND. & IREL.,

CONSULTING PHYSICIAN TO CHARING CROSS HOSPITAL.

LADIES AND GENTLEMEN.—We have been strangers to each other until to-day (I am addressing myself to students only), but you know that this is not my first appearance at Charing Cross Hospital. When our Dean invited me to address you at the opening of another session I realised that it is fully 40 years since I joined the school, not as a student but as a teacher—but nevertheless a student. Let me say at once to you that I have been a student ever since, and that I am a student still, for I hold that it is never too late to learn; if I might have my time and choice again, I would change places with one of you to-day. The best wish I can offer you is that you all may be ready to say the same yourselves after 40 years of professional life—perhaps from this very place.

It occurred to me to ask ourselves, you and me, how it comes that one can give voice to this sentiment? What is it that attracts us to the study of Medicine—and, once we are engaged in it, binds us so firmly to it? I answer without hesitation—two influences: the Call of Nature and the Call of the Heart.

THE CALL OF NATURE.

The Call of Nature is strong in all of us from the dawn of intelligence. It is as natural for a child, when infancy is past, to ask "Why?" as to cry for food; the one craving is as strong as the other. We are all naturalists at first. Holmes puts this fact plainly when he writes: "From a very early age the child desires to know the why and the wherefore of things and asks innumerable questions which make him the terror and despair of his parents." And let us observe that this inquisitive instinct of the child and boy is a craving for natural knowledge for its own sake, not with an ultimate object; just as he eats because he is hungry without any notion of the physiological use of food. If pressed on the subjects he would give us to understand that both to learn and to eat fill him with a sense of satisfaction and contentment.

In a few years we find the lad an active naturalist with his birds' eggs, butterflies, and silkworms, not to speak of his domestic fauna; or an embryo chemist and physicist building crystals, distilling coal-gas through a "churchwarden" pipe, filling soap-bubbles with tobacco smoke which burst like shells over his younger brother's pasteboard fortifications, leaden soldiers, and tin ships. Other attractions and necessity presently compel the majority of lads to abandon these delights. For the rest there is open a choice to follow one of the applied sciences, as they are called—the practical arts based on natural science. Medicine is one of them, and the young man's father, respecting the bent of his mind and recognising the usefulness and honourable status socially of our profession, where there is also good prospect of a reasonable and independent livelihood if it be honourably practised, confirms his selection of it. It is in this way surely that you have been brought to Charing Cross Hospital to-day—not, I am sure, for purely commercial ends, which it is to be feared have been promoted by the panel.

With his entry as a medical student the young naturalist finds himself in a new world of wonder and delight. Which of us who are your seniors can forget his feelings when he was introduced to the microscope in practical biology and histology; to the demonstrations of physiological actions and chemical physiology; to the delicate coördination and self-regulating mechanisms of the different functions? Even

the structure and the architecture of the dry bones and the associated muscles furnished us with problems of scientific interest. Every day of his years of preliminary study the future physician and surgeon is increasing the range of his knowledge of nature, every day adding to that same sense of satisfaction with knowledge that he felt as a child. I have had friends who spent a few years in the study of Medicine for little or no other purpose than to taste and preserve this feeling. And, indeed, the medical student as long as he is learning of the normal body only may never have occasion, any more than has the child, to put the question directly to himself: "What is the use of all this?"

At the beginning of a more advanced session the answer comes home to him before he has inquired. He is introduced to pathology. He takes up practical morbid anatomy and finds that the delicate cells, the vessels, the viscera that he has learned to know in their intimate structure and uses, the blood in its different elements, the mechanisms which he has studied at work, may and do become disordered and diseased—structurally changed, functionally disabled. In many instances, particularly when he is introduced to bacteriology, he discovers the agents of disease side by side with the morbid changes. He has been no stranger to illness in everyday life, but he gets a shock when he sees these visible and tangible evidences of damage before his eyes. But the instinct of building—of mending, which Holmes names the constructive instinct of every young person, possesses him and gives him heart. He bethinks himself of what he has learned side by side with physiology—something of pharmacology, the local and general actions of drugs on cells, vessels, and nervous and other tissues; and he wonders whether these could not be employed to help Nature in her need, by moderating or arresting disease. Are repair and recuperation of functions possible? With specimens of disease before him he may well question how far the value of artificial interference extends. It is at this stage of his work that another aspect of pathology is revealed to him: a fresh conception of disease is framed in his mind. He is taught to look again and to consider well, and he finds that a great part of what he has been regarding as a morbid or destructive change of the tissues is itself repair, healing. Nature has been mending on her own account—spontaneously, and this in many ways and in many forms. And now the student has reached a position as a naturalist which enables him to comprehend one of the great laws of Nature. He has before his eyes evidence of the Struggle for Existence between the body of man and the countless influences of possible damage that surround and threaten it. He comes to understand what is meant by the Survival of the Fittest: what we signify when we speak of the evolution of life and living things by vicissitude and trial. He learns that there is no such state as rest in Nature: that life is essentially movement and change; and that it is by this struggle that the progress of man is assured—progress towards a destiny that is obscure and still remote in the clash of the many and various influences, favourable and unfavourable, in his environment.

This conception of life and disease opens up to him a new and vast field of nature study. He must acquaint himself not only with microbic agents of pathological change, but with mineral, vegetable, and animal poisons; with foods; with the actions on the body of cold, heat, weather, seasons, and climate; of physical stress on muscles, heart and lungs; and of occupation and exercise. These influences lie outside man, yet constantly affect him; indeed, threaten his health and life; and with them the future practitioner must be familiar. Consider, in passing, the delight and satisfaction of the intelligent mind that is furnished—even if it be but moderately furnished—with such knowledge. Compare the pleasures of life to him with those enjoyed by the laity or even by the lawyer or the lawyer-politician, who is understood in these days to know nothing about science.

With this sense of the relation of man to his environment it comes as an inspiration to the student that he will presently have to take a position, a stand in life, between the one and the other; to do nothing less than regulate, check, neutralise, moderate or interrupt, on the one hand, or on the other hand to utilise, as circumstances may demand, the impact of the one on the other. He will have to

¹ Delivered to the students of Charing Cross Hospital Medical College (University of London) at the opening of the winter session of 1916.

help his individual patients in the struggle for existence, to keep or to make them fit for survival. And by doing so and otherwise (grander purpose of his work still) to promote in however small degree the material evolution of the race. All of which knowledge and intelligent endeavour are those of an earnest naturalist—responding to the Call of Nature. At Charing Cross you have before you as your model the memory of one who was not only among the greatest of English naturalists of his own or other time, but the champion of the doctrine of evolution in its delicate infancy—Huxley, who sat like one of yourselves a student here at the opening of the session on Oct. 1st, 1842. You cannot all be Huxleys, but you can all strive in the many opportunities which Medicine will afford you (for every case of illness is a problem in natural science, and presents some difficulty which it is a delight to overcome) to maintain the reputation which he left behind him and to the school.

THE CALL OF THE HEART.

In time the medical curriculum will have introduced the student to the out-patient room of the hospital—to disease in being, to sickness, suffering, disablement, and misery, variously expressed and variously borne. And now the call of humanity is at his heart. Each case is an occasion for sympathy, an opportunity to help, to benefit—that is, to do good. This motive is quite other than the stimulus that is provided by the study of Nature; it is as strong and active in the unprofessional and the ignorant. But as clinical training proceeds it converges with that other and fits in, merges with it, quickening and sustaining it, and with it constituting the Spirit or Soul of Medicine.

Your sympathy with your patient in distress rouses in you a fresh interest in disease. It prompts you to inquire in a new and necessary direction—into the causes of the patient's illness. Here your taste, training, and equipment for exact investigation will find almost unlimited scope for exercise. This new subject involves nothing less than an inquiry into the man's personal history—his whole record, to trace if possible the relation of his constitution, his bodily soundness or its unsoundness, and in particular the relation of his present illness, to his inheritance, up-bringing, occupation, to his disposition, his habits of living and exercise, his fortunes and his misfortunes past and present. The field of your sympathy enlarges as your investigation of his case becomes more and more intimate; your heart is touched as much by the causes of his disease as by his bodily sufferings; by the history of misfortune, poverty, and misery that led on to illness; and even his indiscretions and follies will be regarded in a new light. For you find that you are studying in concrete form, in the living man, an instance of the struggle for existence. You feel that other than material influences and micro-organisms are among the agents of disease, degeneration and death, and that in your combat with these you will have to reckon with worry, poverty, misery, and men's evil passions.

This consideration enables us to recognise our professional ideal on its highest planes. Why may we not, by standing between this man and the unfortunate circumstances of his life that have landed him in bodily disease and social disability, and by throwing our sympathy as well as our cultivated knowledge into the struggle, promote his moral as well as his bodily welfare, and help him to recover his character as well as his health? The family doctor has constant opportunities special to his professional relations—by organised charity, by personal devotion, by advice, by warning, by reproof, as the case may demand, to help the man to choose the better part. And, as a higher aim still, why may we not by investigation and determination of the effects of moral as well as of material influences on the health, fitness, success and character of mankind in general promote the spiritual evolution of the Race? In this Medicine takes its share with the other professions, and with all, professional and unprofessional, the statesman, the schoolmaster, the parson, who have the welfare of the people at heart. This is humanity indeed. For there is at work on the earth a moral evolution of man as surely as a material or bodily evolution—slow indeed, and at times apparently interrupted or ended according to our imperfect notions of time. This world of ours is a place of trial, of temptation, of probation, of

receiving and accounting for talents and opportunities. We are blessed with a power of self-control manifested in our will, a power of choosing between right and wrong, of overcoming evil influences around us, as surely as we are provided with natural resistance to meet physical forces, dangerous extremes of temperature, and infectious organisms—

"Our wills are ours, we know not how,
Our wills are ours to make them thine."

Here is a prospect! Do not be discouraged by its vastness, its range, and its responsibilities. You will have to take and fill only a small place in it with others. But however small and humble your position in Medicine, if the true Spirit be there, you will be doing what I have called your share. Most likely it will be a general practice among the poor—securing the safe birth and rearing of children; advising on the exercise, training, and occupation of youths; counselling the middle-aged and aged on every subject that bears on their health and through it on their happiness. Or you may choose the service of Public Health, and give your life's work to the same subjects in a collective instead of an individual way. Or, again, the Medical Services of the Navy or the Army or the Colonies may call you; and in what do the duties of these consist but in giving your whole heart, and it may be your life, for others—for their bodily and moral advancement. And this you will do with a sense of humility which well becomes the student of Nature. Having learned so much, you will know how much more remains to be learned; you will know your own ignorance. How can anyone that attempts to appreciate the relation of evolution to time be other than humble over his own contribution to it?

It is a far cry from your entrance at a medical school to eugenics—from the study of bones and the elements of biology and animal chemistry to the practical problems of therapeutics and public health. But I have thought it well to set before you at the start a vision of the ever higher and ever-widening path you will follow, step by step, if you are faithful to the Spirit of Medicine, until you have attained the worthiest object of worldly desire: the betterment of your fellow men. And I have tried to keep this object clearly before you for a reason to which I will now briefly refer as it is apposite to the present time.

Is scientific interest in disease sometimes so strong that it drowns the Call of the Heart? Is it possible that the occasions, opportunities, and urgent need of sympathy are ever disregarded by the profession; that patients become "cases" and cases only? Surely never in this country. Such indifference is cruelty; and we are not cruel. But it is not so everywhere.

I came to Charing Cross from long study in Vienna under German influence in laboratories and in hospitals when the Franco-Prussian War was nearing its end in a German triumph. Investigation and clinical demonstration of disease were pursued in the highly organised order characteristic of the people. But the whole spirit of their institutions was materialistic. The hospital patients were spoken of collectively as *das Material*. And what struck a British-born visitor was both the personal indignities to which certain patients were subjected and the contemptible spirit in which they submitted to them. An English man or woman would have revolted against such treatment, at whatever cost to health and recovery. Already in those days the sense of humanity in the German appeared to be blunted. Already there existed in him a degree of that disregard for the happiness of others and for human life which was ready, as General Smuts has said, "to turn science and economic organisation into instruments of wrong, crime, and ruthless disregard of common morality and Christianity," and which, fed upon worldly success, has developed into his cold-blooded ferocity of to-day. For it would appear that it was not alone excess of scientific interest that made the German surgeon indifferent to the amenities and even the decencies of practice. The German is essentially rude and cruel.

Back in my own country I found that the good name of Charing Cross Hospital rested not alone on the fame of Huxley, its great scientist, scholar and naturalist but on the records of the many old pupils who had given the best of their lives to their patients; and that, outstanding among these, never forgotten and much honoured, were Livingstone,

naturalist and explorer, as well as medical missionary, and thus a link with Huxley; and Llewellyn, who refused to leave his patients at the sinking of the *Alabama* and went down with them and the ship. Here is a noble instance of loyalty to the Call of the Heart! It stands out, no doubt, in part because the occasion was historical, and Llewellyn's devotion to principle suddenly tried and instantly proved. But those noble soldiers just named by the Dean whom from to-day you are proud to call fellow students, and your teachers at the different fronts, physicians and surgeons of the hospital, whom I am proud to reckon among my intimate friends and colleagues, have been and are as faithful to duty in the present war. If we may not pray, as some teach, for success of the Armies of either side, at least we may pray for those friends and others whose purpose is the saving, not the taking, of life. And, apart from such abnormal times, let me tell you that the hundreds of Charing Cross men in general practice whom I have known have by their self-sacrifice in social circumstances almost as taxing as war—in their whole lives spent in the midst of poverty and misery and disease—proved just as loyal to the highest ideals of the profession. Many of you have before you in practice trials of every kind and degree (they are inseparable from professional work)—anxieties, disappointments, vexations, temptations in your weariness to do less than your duty, ingratitude; not to speak of dangers to health, soundness and usefulness, and life. Meet such trials by preserving in your dealings with patients the true balance of head and heart. What I have tried to present to you I will sum up and again commend to you in words which at an early stage of my own professional career I had the good fortune to hear fall from the lips of Sir James Paget: "He that will seek the Truth earnestly, with patience and humility, in the fear of God and the love of man will surely find it."

SOME OBSERVATIONS ON DYSENTERY.

By WILLIAM MAGNER, M.B. R.U.I., D.P.H.,

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A DETAILED account of the intestinal lesions would be out of place in this paper. For an excellent description the reader is referred to Castellani and Chalmers's "Manual of Tropical Medicine." It appears, however, necessary to emphasise certain facts with regard to the pathology of the disease.

(A) From the pathological aspect the disease can be divided into two more or less distinct stages. The first is that of uncomplicated entamoebic activity, the second of combined action of the entamoebæ and bacteria.

Appearance of large intestine in early stages.—At this period we are confronted with the results of the invasion of the submucous and muscular coats of the large intestine by the *E. histolytica*. The appearance of the intestine is characteristic. Projecting from the mucous membrane over the affected area are numerous nodules about the size of a small pea. These are usually surrounded by a ring of dilated vessels and are produced as the result of the localised serous exudate around the invading parasites. Some of the nodules are capped by a little dark-coloured slough, and in many this slough will have been cast off so that the nodule is transformed into a small ulcer. These ulcers are of varying depth; some involve the mucous membrane alone, others extend into the submucous and still others into the muscular coat, occasionally even reaching the peritoneum. At this stage the ulcers are flask-shaped, the opening being small and the mucous membrane undermined to a considerable extent. The areas of mucous membrane lying between these nodules and ulcers are normal in appearance. Microscopical examination shows that the primary exudation around the entamoebæ is mainly serous in character. When ulceration has taken place it changes in type, becoming more cellular, but leucocytic accumulation is never a prominent feature at this stage. The blood-vessels in and around the affected area are dilated, but it is rare to see any signs of interstitial hæmorrhage. Entamoebæ

can usually be detected in the depths of the submucous coat. The tissue cells show degenerative changes, chiefly vacuolation.

Clinical features in early stages.—This stage of the disease is characteristically apyrexial. Acute cases are met with in which pyrexia is a feature from the onset of the disease, but these are exceptional. The stools are scanty and gelatinous, consisting entirely of blood and mucus, with no fecal admixture.

Appearance of intestine in later stages.—The characteristic feature of this period is a secondary bacterial invasion of the originally amoebic ulcers. These extend rapidly and become very irregular in outline, the mucous membrane of the affected portion of the bowel becomes uniformly inflamed, and the picture may become almost indistinguishable from that seen in a severe case of bacillary dysentery. As a rule, however, it is possible to determine the origin of the lesions from the persistence of the characteristic amoebic ulcers here and there, usually in the cæcum, and from the fact that the diphtheroid membrane so characteristic of the latter disease is not a prominent feature. The microscopic picture has by this time considerably altered. The blood-vessels are markedly dilated, there is a dense accumulation of leucocytes, and small hæmorrhages can be detected in the mucous, submucous, and occasionally in the muscular coat. The extent of this secondary infection is variable. Occasionally post-mortem examination of the intestine shows numerous fully formed amoebic ulcers with no sign of bacterial invasion having occurred. Usually, however, its effects are to be seen, and in the majority of cases the characteristic lesions are well marked.

Clinical features in later stages.—The bacterial invasion of the intestine wall leads to a change in the clinical picture. The disease, characteristically apyrexial in its earlier stages, becomes pyrexial, and the stools may change in type, becoming more abundant and fluid.

It is quite clear that bacteria must play a very important part in the majority of cases of amoebic dysentery, as it is obvious that the deeper tissues of the intestinal wall become exposed to the action of bacterial agents just as soon as an ulcer is formed at any spot. The pathological and clinical manifestation resulting will, however, depend upon the capability for virulence possessed by the organisms in question. It is not uncommon to find a picture of uncomplicated entamoebic activity even in patients dying at a somewhat advanced stage of the disease. Usually, however, even when death occurs early, the characteristic bacterial lesions will be found either at one or other spot or more or less uniformly over large areas of the intestinal wall.

(B) The pyrexia so frequently observed in the later stages of amoebic dysentery is usually a toxic phenomenon, due to bacterial activity in the gut wall. It is moderate in degree and of the usual hectic type. Occasionally, however, the temperature is maintained at a comparatively high level, and hæmoculture in such cases frequently shows the presence of a bacillæmia. This is attributable to the bacterial invasion of the deeper tissues of the intestinal wall through the ulcerated surface. Organisms growing in such surroundings may, even if normally saprophytic, become sufficiently enhanced in virulence to enable them to penetrate into the blood stream. A series of 30 blood cultures carried out on patients with maintained pyrexia gave, regardless of those cases in which a coexistent paratyphoid infection was demonstrated, three positive results. The clinical features of these cases, with an account of the organism isolated, are included in the following notes:—

CASE 1.—Private, aged 19. Patient admitted to hospital with a temperature of 102° F., which, with a morning remission to 101°, persisted for three days. Bowel motions averaged nine in the 24 hours, consisted of blood and mucus, and contained *E. histolytica*. Hæmo-culture on the third day yielded *B. coli communis*. On the morning of the fourth day the temperature sank to 99°, and the patient made an uninterrupted recovery.

CASE 2.—Sergeant, aged 21. In this case the temperature was of a hectic type, rising to 102° F. at night and falling to normal in the morning. History of severe dysentery with passage of blood and mucus. From date of admission the bowel motions averaged five to nine in the 24 hours, were feculent in character, containing mucus but no blood. *E. histolytica* present. Hæmo-culture on the third

day yielded an unidentified bacillus with the following characters.

Morphology.—Actively motile, Gram-negative, non-sporing bacillus.

Cultural reactions.—Does not liquefy gelatin, produces acid in glucose. No change in lactose, mannite, dulcitol, saccharose, or maltose. Slight pellicle in peptone water; no indol.

Agglutination reactions.—Very feeble clumping with patient's serum in a dilution of 1 in 50 in 12 hours. Not clumped by anti-dysenteric, typhoid, or paratyphoid sera.

Pathogenicity.—The organism is non-pathogenic to guinea-pigs by intraperitoneal injection, the animal recovering after a few days' illness.

This organism has been encountered on several occasions in dysenteric stools.

In this case the pyrexia lasted for 10 days, after which the patient gradually recovered. The remaining case which yielded a positive result was a case of bacillary dysentery, and will be referred to under that heading.

(C) A point of extreme practical importance is the comparative frequency with which amœbic ulcers are detected in the cæcum of patients who have never complained of dysenteric symptoms. In the series of post-mortem examinations performed by Lieutenant Bartlett in No. 21 General Hospital the condition was not infrequently detected in patients dying from gunshot wounds or other causes. These latent cases constitute a serious problem, not only because the disease may at any time become active, but because each such case is a possible source of infection to others.

Parasitology of Amœbic Dysentery.

During the examination of a series of dysenteric stools two types of entamœbæ will be met with, *Entamœba histolytica* and *Entamœba coli*, the former highly pathogenic, the latter harmless. It requires considerable experience to differentiate the two types in the unencysted stage; when encysted the appearance of each is characteristic. Examination of the stool immediately after it has been passed is the ideal procedure, the characteristic movements of the parasite facilitating its detection. When the stool cools the amœboid movements cease, and it therefore becomes more difficult to find the organism. In doubtful cases it is necessary to stain films, and this is always advisable for exact study. The characteristics of the two entamœbæ may be briefly set out as follows.

***Entamœba histolytica.*—Free form.**—Size varies much (15 μ to 60 μ). The ectoplasm is well differentiated from the endoplasm. The protoplasm is finely reticulated, giving the appearance of minute granules. There are usually one or two vacuoles, but occasionally vacuolation may be very marked. The parasite is actively phagocytic, and is frequently seen to contain red blood corpuscles, pus cells, &c. This is a characteristic feature. Amœboid movements are active in comparison with those of *E. coli*. The nucleus is small and vesicular in type, its chromatin being arranged around the inner surface of the nuclear membrane in fine granules or bars. There is usually a well-marked central karyosome, showing in well-stained specimens a minute centriole. Previous to encystment the entamœbæ become much reduced in size (10 to 15 μ). At this stage the protoplasm is frequently seen to contain deeply stained bodies of a chromatinic nature known as "chromidia." These chromidia are characteristic. I have never seen them in *E. coli*, though other observers have described their occurrence in the latter form.

Encysted form.—The encysted form of *E. histolytica* is, from the number of contained nuclei, known as *E. tetragena*. This form was first described by Viereck (1907), who thought he was dealing with a distinct species. James (1914) showed that this form was simply a stage in the life-history of *E. histolytica*. The cyst is exactly spherical in shape, but the cyst wall being very thin, it is apt to become distorted, and may so appear in stained films. The nuclei are characteristically four in number and may be grouped together in the centre of the cyst or arranged in pairs at opposite poles. The "chromidia" described as occurring in the free forms are also frequently observed in the cyst. Cysts containing one, two, or three nuclei may also be met with; these latter forms often show vacuolation of the protoplasm.

Entamœba minuta.—Elmarsian in 1909 observed very minute entamœbæ in dysenteric stools and described them as a new species. James, however, concluded that they represented yet another stage in the life-history of *E. histolytica*. This form is found in chronic or convalescent cases, and is an example of the reduction which takes place in the size of *E. histolytica* previous to encystment.

***Entamœba coli.*—Free form.**—Averages 15 μ to 60 μ diameter. The differentiation between ectoplasm and endoplasm is not clear. Vacuolation is usually a very marked feature. Its phagocytic powers, as compared with those of *E. histolytica*, are apparently weak. It is quite usual for bacteria to be ingested, but I have never seen contained leucocytes or red cells. Amœboid movements are very sluggish. This nucleus differs from that of *E. histolytica* inasmuch as it is considerably larger, and the peripheral chromatin masses are larger and stain more intensely. "Chromidia" I have never seen either in the free or encysted forms.

Encysted form.—The cyst of *E. coli* is larger than the tetragena cyst (averages 15 μ to 20 μ in diameter). The limiting membrane is thicker. The fully developed cyst contains eight nuclei, but forms with two, four, and six nuclei also occur. Differentiation from the tetragena cyst is usually very easy.

Treatment of Amœbic Dysentery.

The stage reached by the destructive process in a given case of amœbic dysentery depends upon the promptness and efficiency of the treatment. Administration of emetine brings about death of the entamœbæ and a more or less rapid recovery depending upon the extent to which the intestinal wall has suffered. In certain very acute or neglected cases the colon becomes irretrievably damaged and the patient's recuperative powers so lowered that a fatal result ensues in spite of specific treatment.

It cannot be too strongly urged that as soon as amœbic dysentery is diagnosed, or even if there is any suspicion of the case being of this nature, treatment with emetine should be commenced and a full course given. Partial treatment is highly dangerous. It has been pointed out by Captain J. G. Thomson, R.A.M.C., that the administration of one or two grains of emetine, though destroying the majority of the amœbæ so that they can with difficulty be detected in the stools, frequently leaves a number of the parasites intact, and these living in the intestinal wall not only prevent healing but give rise to the discharge of cysts and the spread of the disease.

In all cases of amœbic dysentery a full course of treatment should be given. This consists of the administration of $\frac{1}{2}$ grain of emetine subcutaneously twice daily for at least 10 to 12 days. Further observations may possibly show that even more emetine ought to be given. By this means, and this means only, can the patient be safeguarded from relapses and the spread of the disease prevented.

Prevention of Amœbic Dysentery.

Amœbic dysentery is spread through the agency of the cysts of *E. histolytica*. These are never passed in the acute stages of the disease, but may exist in enormous numbers in stools of chronic or convalescent cases. This is a point of extreme practical importance and indicates the necessity for vigorous treatment of all cases. The cysts are, of course, developed from the free forms; emetine destroys the latter, but appears to have no effect on the cysts. If, therefore, sufficient emetine be given to ensure the destruction of all the free forms cyst production is prevented. On the other hand, if the course of treatment be cut short a number of entamœbæ will infallibly escape, and the patient not only becomes liable to relapses but is a danger to the community.

The cysts reach the alimentary canal by means of food infected through the agency of dirt or flies. In this connexion Captain J. G. Thomson has demonstrated the highly important fact that cysts can be detected in the intestinal canal and faeces of flies 18 hours after they have been fed on infective material. Apparently cysts can also live in a fluid medium, such as water or milk, in the absence of a heavy bacterial contamination. It is evident therefore that the prevention of amœbic dysentery amongst the troops depends upon: (1) The elimination of cyst carriers. This

may be attained by early diagnosis and prompt treatment. (2) Efficient protection of food from dust and flies. (3) Efficient and carefully supervised sanitary arrangements in the trenches and in camps. Promiscuous pollution of the soil must be avoided at all costs, and all faecal matter must be rapidly and completely destroyed so as to prevent access of flies.

Observations on the Pathology of Bacillary Dysentery.

An excellent account of the morbid anatomy of this disease is contained in Castellani and Chalmers's "Manual of Tropical Medicine." It seems to me, however, that certain points with regard to the production of the intestinal lesions require emphasis.

(A) In amoebic dysentery the primary lesions result from the entrance of the parasite into the submucous tissues at numerous points throughout the colon. Necrosis of tissue is at this stage limited to foci corresponding to the seats of entamoebic activity. In bacillary dysentery the course of events is radically different. The ulceration does not spread from scattered foci in the gut wall, but is the result of the action of a bacterial toxin which exerts its effects uniformly throughout the affected portion of the bowel. The picture of isolated ulcers separated by areas of healthy mucous membrane, which is so typical of amoebic dysentery, is never found.

(B) Microscopical examination of suitable specimens shows that the earliest pathological change is dilatation of the blood-vessels throughout the intestinal wall and a marked exudation into the submucous coat. This exudation is not, as usually described, serous in character, but is sero-haemorrhagic. In other words, while the submucous layer is markedly oedematous numerous haemorrhages are to be seen throughout its substance. *This submucous haemorrhage is invariably well marked and is highly characteristic of bacillary dysentery.* The dilation of the vessels mainly affects the veins and is not limited to the submucous coat. The subserous veins are also dilated, and the mucosal vessels are in a similar condition. A prominent feature at this stage is the absence of leucocytes. Later, when sloughing of the mucous membrane starts, these begin to accumulate and the vessels will be seen to contain numerous polymorphonuclear leucocytes which are undergoing diapedesis into the tissues.

(C) The ulcers produced in this disease are typically shallow and irregular; they may be very extensive and sloughs visible to the naked eye may be discharged in the stools. Ulceration may extend deeply into the coats of the intestine so as to involve the submucous and muscular coats, but in my experience this is exceptional. The islands of mucous membrane between the ulcers are oedematous and haemorrhagic, and are usually covered by a ragged diphtheroid membrane. Section of the intestinal wall at this stage frequently shows an extraordinary degree of activity in the phagocytes, especially in the large mononuclear varieties. Many of them are seen to be loaded with blood pigment, while it is not uncommon to come across a cell with a contained red corpuscle. The connective tissue cells will be seen in various stages of degeneration, and in this respect vacuolation is a prominent feature, especially in the fibroblasts.

(D) It has been shown that bacterial invasion of the blood stream is an occasional complication in the later stages of amoebic dysentery. That it can also occur in the bacillary form is shown by the following case.

CASE 3.—Corporal, aged 24. Patient admitted to hospital with a temperature of 102° F. History of a week's illness with severe dysenteric symptoms. Stools on admission 4 to 12 in 24 hours, containing fluid mucus and blood. *E. histolytica* absent; *B. dysenteriae* not isolated. Agglutination carried out on the day after admission showed agglutination of Shiga bacillus in a dilution of 1 in 800 in 12 hours. Feeble agglutination of Flexner bacillus in a dilution of 1 in 50 in 12 hours; none in higher dilutions. Haemo-culture on the day after admission yielded a somewhat anomalous bacillus coli which fermented saccharose. On the fourth night the temperature reached 107° and the patient died. Post-mortem examination showed in the large intestine the typical picture of advanced bacillary dysentery, cloudy swelling of liver, spleen, and kidneys, and lobar pneumonia of left lung.

Apart from the bacillæmia, an interesting feature of this case is the high agglutination titre reached by the serum in a

patient who, as far as could be gathered, had been ill only ten days. The pneumonia evidently was the cause of the hyperpyrexia and death.

Observations on the Bacteriology of Dysentery.

An historical review of the work done on this subject would serve no useful purpose and would fill many pages. For an excellent description the reader is referred to Flexner's article in Allbutt's "System of Medicine."

The following notes contain a short account of some organisms commonly encountered in dysenteric stools, with some observations on their pathogenicity. In connexion with this subject I submit the following report on the microscopic and cultural examination of 300 dysenteric stools. The specimens examined were not in any way selected; cultures were prepared whether the disease was clinically amoebic or bacillary, whether entamoebae were or were not detected. The following facts will serve as an introduction to this section.

(A) During the three months September, October, and November, 1915, the dysentery occurring amongst the troops of the Mediterranean Expeditionary Force was almost altogether of the amoebic variety. During this period dysentery bacilli were isolated from only 9 per cent. of the cases examined. From December, 1915, to March, 1916, the total case incidence was much reduced, amoebic dysentery declined and bacillary dysentery became more prominent. Of the cases investigated during this period 20 per cent. were of the bacillary type.

(B) The bacillary dysentery never assumed an epidemic type; the cases were sporadic, not limited to any particular area or any particular unit.

(C) A certain number of mixed cases were encountered, showing simultaneous infection with *E. histolytica* and one or other member of the dysentery group of organisms. The following is a summary of the results obtained during the examination of the 300 cases under review.

| | |
|--|-----------|
| <i>E. histolytica</i> the sole pathogenic agent detected in | 36 cases. |
| <i>B. dysenteriae</i> the sole pathogenic agent detected in | 23 " |
| Both <i>E. histolytica</i> and <i>B. dysenteriae</i> detected in... | 8 " |
| <i>B. Morgan</i> No. 1 isolated from | 13 " |
| Streptococci isolated in large numbers from | 10 " |
| <i>B. faecalis alcaligenes</i> isolated from | 8 " |
| Bacilli resembling dysentery group but failing to agglutinate with anti-dysenteric sera isolated from | 15 " |

Of those cases in which neither entamoeba nor dysentery bacilli were detected the majority were almost certainly amoebic in origin. Most of the patients had received emetine prior to admission, and the response to this treatment was sufficient proof of the nature of the disease, though entamoebae could not be detected in the stools. A feature of almost all the stools examined was the large number of non-lactose-fermenting organisms developing on MacConkey plates. The majority of these are certainly to be regarded as harmless saprophytes developing luxuriantly in a suitable environment.

Bacillus dysenteriae.—Organisms of this class were isolated from 31 cases, 19 yielding *B. Shiga* Kruse and 12 yielding organisms of the mannite-fermenting type.

B. Shiga Kruse.—It seems quite clear that this organism shows a slight degree of motility in young broth cultures. As the culture cools the motility disappears, to return after a short stay in the blood-heat incubator. In cultures over 48 hours old it is impossible to detect any movement. The severity of the disease resulting on infection is variable. In the majority of cases it runs a markedly pyrexial course associated with very severe intestinal symptoms; occasionally, however, the pyrexia is slight and the intestinal symptoms mild. The development of specific agglutinins is constant and may reach a high grade (*vide infra*).

Mannite-fermenting type.—Organisms of this class never show distinct motility. Their virulence is variable. Usually the case runs a course indistinguishable from that of *Shiga* infections, but not uncommonly the symptoms are those of a severe diarrhoea without passage of blood and without any pyrexia. It appears certain that these organisms can exist

in the intestines in an avirulent form. In one case an organism of this class was isolated from the stools 17 days before the appearance of dysenteric symptoms. In an actual infection the development of agglutinins is constant. In the above-mentioned case the serum contained no specific agglutinins at the time of isolation of the organism, whereas one week after the appearance of symptoms the sera had attained an agglutinative titre of 1 in 200.

Cases of double infection with *E. histolytica* and dysentery bacilli are invariably severe, showing marked toxic symptoms, frequent bowel motions, and a considerable though somewhat variable degree of pyrexia.

In bacillary dysentery treatment with the specific antiserum, if instituted before the intestine has become extensively ulcerated, yields satisfactory results. A serum of high potency must be employed and prolonged treatment may be necessary.

B. Morgan No. 1.—The cases from which this organism was isolated showed no constant characters, except the presence of a variable degree of pyrexia. In 5 of the cases *E. histolytica* was also present, in 2 *B. dysenteriae* was isolated, and in the remaining 6 neither pathogenic agent could be detected. The experimental infection of animals (per os) tends to show that this organism cannot originate dysenteric lesions. It appears, however, that, in common with other intestinal bacteria, it may attain some importance as a secondary invader of the ulcerated intestinal wall. The agglutination reaction with patients' serum was carried out in 6 cases. In 2 of these a positive result was obtained in a dilution of 1 in 100; the remaining 4 gave completely negative results (*vide infra*).

Streptococci.—The organism was not completely identified, but seemed to be of the ordinary faecalis type, arresting attention from the large number of colonies developing on MacConkey plates. It was chiefly met with in diarrhoeal stools, but also occurred in the discharges from cases of true dysentery. It is probably of no pathogenic importance except perhaps as a secondary invader. This conclusion is supported by its frequent occurrence in typhoidal stools.

B. faecalis aequaligena.—This organism was met with in 8 cases, and in 4 of these was the predominating organism. On three occasions it was tested against the serum of the patient with negative results.

Bacilli resembling the dysentery group in morphology and cultural reactions.—These organisms were met with in 15 cases. They are all Gram-negative, non-motile bacilli, fermenting glucose, mannite, maltose and saccharose, and producing no change in lactose and dulcitol. Agglutination tests with various anti-dysenteric sera, carried out both on isolation and after repeated subculture, invariably gave completely negative results. Similar organisms have been described by other workers (Ledingham and Penfold, Archibald). The former workers think it probable that they are true dysentery bacilli belonging to a group which can only be differentiated by a serum prepared by immunisation with one or more of their number. I cannot subscribe to this opinion for the following reasons: 1. The organisms were met with in combination with *E. histolytica* and *B. dysenteriae* as well as by themselves; they occurred in simple diarrhoeal stools as well as in those from dysenteric patients. 2. Agglutination tests with patients' serum are almost invariably negative; in two cases only was a positive result recorded (*vide infra*). 3. The organisms are not fatal to guinea-pigs by intraperitoneal injection. 4. They have on several occasions been isolated from typhoidal stools. It would seem, therefore, that these organisms are to be regarded as one of the many varieties of saprophytes which flourish luxuriantly in the lumen of the dysenteric intestine.

Unidentified organisms commonly met with in dysentery stools, both amoebic and bacillary.—Organism No. I. (see table) is particularly interesting, as it was on one occasion isolated from the blood (Case 2, amoebic dysentery) and on another from the spleen post mortem. It is non-pathogenic to guinea-pigs. Subcultures were made weekly for several months, but the organism never varied in its character. Organism No. IV. is at first somewhat similar, but no acid is produced in saccharose, and after prolonged incubation a greenish colour developed on agar slopes. It seems, therefore,

to belong to the fluorescens group. Organisms of Types II. and III. are frequently met with. Their sugar reactions frequently vary on subculture; they could not, however, be made to ferment lactose. No. II. was somewhat out of the ordinary inasmuch as it liquefied gelatin. Several of these

| No. | Morphology. | Glucose. | Lactose. | Mannite. | Dulcitol. | Saccharose. | Maltose. | Indol. |
|------|--|----------|----------|----------|-----------|-------------|----------|--------|
| I. | Gram-negative, actively motile bacillus. | A. | — | — | — | — or A.S. | — | ? |
| II. | " | A.G. | — | A.G. | — | A.G. | A.G. | + |
| III. | Gram-negative, motile bacillus. | A.G. | — | A.G. | A.G. | — | A.G. | + |
| IV. | Gram-negative, actively motile bacillus. | A. | — | — | — | — | — | + |

A. = Acid. A.S. = Slightly acid. A.G. = Acid and gas.
— = No change.

Remarks.—Organism No. I.: Not agglutinated by antityphoid serum; pellicle in fluid media. Organisms Nos II. and III.: No clumping with paratyphoid sera. Organism No. IV.: After long subculture greenish pigment; pellicle in fluid media.

organisms have been tested against the serum of dysenteric patients, and the results obtained suggest that though usually purely saprophytic in some cases they may assume a pathogenic rôle as secondary invaders (*vide infra*).

Experimental Dysentery.

The lesions produced in the intestine in bacillary dysentery are recognised; the fact that they are due in all cases to infection with one or other member of the dysentery group of organism may be taken as proved; but the exact manner in which the lesions are produced is not clearly understood. Flexner and Sweet have carried out some important and interesting work on experimental dysentery, as also have Vaillard and Dopfer, Strong and Musgrave, and many others. The conclusions of these workers may be summarised as follows.

Infection by the alimentary canal in man is followed by typical dysentery. In animals negative results are almost invariable; mucous diarrhoea may develop, but never true dysentery. Intraperitoneal injection is rapidly fatal to most animals, but none of the characteristic lesions are present. Intravenous injection causes in the majority of animals death from septicæmia. The most interesting results are obtained from subcutaneous inoculation. In rabbits, cats, dogs, and young pigs this experiment is stated to result in the development of intestinal lesions somewhat comparable to those found in the human subject. The sequence of events in experimental animals seems to be as follows (Flexner): Absorption of the toxins from the site of inoculation, excretion into the small intestine through the bile, re-absorption and final elimination through specialised areas of the intestinal mucosa, the toxins in their passage through the capillaries setting up the characteristic inflammatory lesions.

In a small number of experiments carried out up to date I have failed to produce lesions in any way comparable to those of human dysentery. I find that intraperitoneal injection of the Shiga-Kruse bacillus is fatal to guinea-pigs and rabbits. The peritoneal cavity contains a sanious exudate, but the intestines present none of the characteristic lesions. Subcutaneous injection results in the development of paralytic symptoms and eventually death. Post-mortem examination shows cloudy swelling of the glandular cells through the body, acute nephritis, but in none of my cases were the intestines affected.

Serological Tests in Bacillary Dysentery.

It is frequently stated that the agglutination reaction in dysentery is unreliable, that occasionally agglutinins are not developed as the result of an attack, and that even in positive cases the serum rarely attains a high agglutinative titre. My experience does not entirely bear out these statements. The number of sera examined is not sufficiently large to permit of dogmatic conclusion, but the following report of the work done in this direction may be of interest.

The first step was to obtain the upper normal limit in a series of non-dysenteric cases. For this purpose 20 sera were examined; they were obtained from enteric patients, cases of pure amoebic dysentery, and healthy persons. The following results were obtained with *B. dysenteriae* (Shiga), the macroscopic method being employed and the time limit four hours:—

- 14 gave completely negative results in a dilution of 1 in 50.
- 4 gave distinct agglutination (++) in a dilution of 1 in 50; none in a dilution of 1 in 100.
- 2 gave distinct agglutination (++) in a dilution of 1 in 50 and a trace (+) in a dilution of 1 in 100.

It was therefore decided to discard the 1 in 50 dilution altogether, and to regard distinct agglutination with a 1 in 100 dilution as proof of a past or present infection with Shiga's bacillus. A similar standard was adopted for the mannite-fermenting strains.

Details of tests.—1. The sera of 9 cases of dysentery, in which *B. dysenteriae* (Shiga) had been isolated from the stools, were tested against the laboratory strain of that organism with the following results:—

- 4 gave positive results up to a dilution of 1 in 200.
- 3 " " " " " " 1 in 400.
- 2 " " " " " " 1 in 800.

2. The serum of 7 cases in which *B. dysenteriae* (Flexner) had been isolated from the stools, tested against the laboratory strain of that organism, gave the following results:—

- 2 gave positive results up to a dilution of 1 in 200.
- 2 " " " " " " 1 in 400.
- 2 " " " " " " 1 in 800.
- 1 gave completely negative results.

The stage of the disease at which the above tests were carried out varied considerably, but in each case symptoms had been present longer than one week.

3. The serum from 30 convalescent dysenteric patients was tested against *B. dysenteriae* (Shiga) and *B. dysenteriae* (Flexner) with the following results:—

- 18 gave completely negative results with both organisms.

Considered as negative—

- 2 gave positive results with Shiga bacillus in a dilution not greater than 1 in 50.
- 1 gave positive results with Shiga bacillus in a dilution not greater than 1 in 100 (+).

Considered as positive—

- 4 gave positive results with Shiga bacillus in a dilution not greater than 1 in 400.
- 2 gave positive results with Shiga bacillus in a dilution not greater than 1 in 800.
- 2 gave positive results with Flexner bacillus in a dilution not greater than 1 in 400.
- 1 gave positive results with Flexner bacillus in a dilution not greater than 1 in 800.

4. The sera from 10 cases yielding the "dysentery-like" bacilli already referred to, tested against a similar organism isolated from other patients, gave negative results in 7 cases; in 2 positive results in a dilution of 1 in 50, negative in a dilution of 1 in 100; and in 1 positive result in a dilution of 1 in 100.

5. The sera of 6 patients from whose stools *B. Morgan* No. 1 had been isolated on being tested against that organism yielded negative results in 4 cases, a positive result in a dilution of 1 in 50 in 1 case, and a positive result in a dilution of 1 in 100 in 1 case.

6. The serum of 6 cases from the stools of which *B. faecalis* *alcaligenes* had been isolated, tested against that organism, yielded in all cases negative results.

7. The serum taken from 20 dysenteric patients, irrespective of the type of disease, tested against *B. coli* and organisms Nos. I. and III. described above, gave the following results: 14 gave completely negative results; 1 agglutinated *B. coli* in a dilution of 1 in 100; 3 agglutinated organism No. I. in a dilution of 1 in 100; and 2 agglutinated organism No. III. in a dilution of 1 in 100.

Summary of Conclusions.

1. Both in amoebic and bacillary dysentery secondary invasion of the ulcerated intestinal wall by organisms from the intestinal lumen is an important factor aggravating both the local and general condition. The pyrexia so frequently observed in the later stages of amoebic dysentery is a result

of this secondary invasion, and though usually toxic in origin may be due to bacterial invasion of the blood stream. A similar septicæmia may occur in the bacillary type of the disease.

2. Amoebic dysentery may be latent, the ulcers being confined to the cæcum and producing no symptoms. Apart from the danger of the disease becoming active such cases may act as foci for the spread of the disease.

3. Every case of amoebic dysentery should be treated by the administration of at least 10 grains of emetine. Incomplete treatment may result in the patient becoming a cyst carrier and a danger to the community.

4. The prevention of amoebic dysentery depends upon the elimination of cyst carriers, rapid and complete disposal of faecal matter, and protection of food from dust and flies.

5. In bacillary dysentery the earliest pathological change in the intestinal wall is dilation of the vessels and a marked hemorrhagic exudation into the submucous coat. Leucocytic accumulation is a later phenomenon resulting on necrosis of tissues.

6. Mannite-fermenting dysentery bacilli can exist in the intestine in an avirulent form. The presence of such an organism in the stools loses much of its significance in the absence of a positive Widal reaction.

7. The agglutination reaction in dysentery is a valuable means of differentiating the bacillary type of the disease. In Shiga infections specific agglutinins are invariably present after the first week of the disease. Distinct agglutination with a serum dilution of 1 in 100 is diagnostic.

8. Judging from serological tests it would appear that certain organisms, normally saprophytic, may in both types of dysentery stimulate the production of specific agglutinins as the result of invasion of the ulcerated intestinal wall.

9. The toxins of Shiga's bacillus are highly pathogenic to rabbits. Subcutaneous injection with either living or killed cultures results in the development of paralytic symptoms and death. The characteristic lesions of the human disease cannot be readily reproduced.

My thanks are due to Major A. R. Ferguson, R.A.M.C., officer in charge of the Central Laboratory, for valuable assistance in carrying out this work; also to Captain J. G. Thomson, R.A.M.C., and Lieutenant G. B. Bartlett, R.A.M.C., who supplied me with much of the necessary material.

A SERIES OF MILITARY CASES TREATED BY HYPNOTIC SUGGESTION.

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THE following paper gives in tabular form an account of 60 cases treated by hypnotic suggestion. Twenty earlier cases were dealt with in the *Journal of the Royal Army Medical Corps* of May, 1916, and a brief summary of these is given below. It will be seen that the most successful cases are those of shock psychasthenia of all kinds, while cases of hyperthyroidism and neurasthenia also show very good results. The cases speak for themselves and confirm me in the opinion that practically all the cases of war neurasthenia and psychasthenia can be cured and sent back to work if treatment by hypnotic suggestion is used in reasonable time. Prejudice against this form of treatment does not, happily, exist in the minds of more than a very small proportion of the patients, and my experience has led me to think that it is only found in those whose keenness to return to the war area is open to considerable doubt. So far as I have been able to trace them, the cure has been permanent in my cases, and if the same standard of criticism be applied to these cases and to similar cases treated in other ways the utility of hypnotic suggestion will be obvious to any fair-minded critic.

The cases cited in the previous article included: psychasthenia, 6; hyperthyroidism, 6; neurasthenia, 2; Jacksonian epilepsy with functional gait, 1; trench shins, 1; painful amputation scar, finger, 1; pain in foot after frost-bite, 1. In 17 out of the 20 cases somnambulism was induced, while in the other 3 earlier stages only were reached. The results were all most satisfactory, complete cure (for the time being at all events) being attained.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|-------|---------|----------|--|----------------------|---|--------------------|---------------------|--|----|----|
| Rank. | Age | Disease. | Disability. | Duration of disease. | History. | Date of admission. | Degree of hypnosis. | Result. | | |
| 21 | Lieut. | 43 | Peoriads. | 30 yrs. | Never without some spots all the time. | 28/4/16 | 60 | Cured apparently. | | |
| 22 | Clerk. | 24 | Neurasthenia. | 6 wks. | Always of nervous temperament. Continuous carbon copying. | 30/4/16 | 28 | Cured. Returned to duty. | | |
| 23 | Pte. | 22 | Psychasthenia. | 9 mos. | Concussion from mine explosion in France. Went to Salonica unit, got worse. | 10/5/16 | 18 | Cured. Sent to England. | | |
| 24 | " | 46 | Neurasthenia. | 6 wks. | Shock, both shell and Zeppelin, Balkans. | 13/5/16 | 5 | Cured. Camp for duty. | | |
| 25 | L.-Cpl. | 26 | Intestinal colic. | Life-long. | Has persisted in spite of appendicectomy. | " | 6 | Cured apparently. Sent to camp. | | |
| 26 | Cpl. | 24 | Hyperthyroidism. | 5 mos. | Relapsed apparently from home worries, and notalgia. | 30/5/16 | 11 | Cured apparently. Sent to England. | | |
| 27 | Pte. | 24 | " | 6 " | Came from Suva with dysentery, conv. camp Dec., '15; later sent to W.I.B., bad all time. | 15/5/16 | 20 | Cured. Returned to duty. | | |
| 28 | " | 24 | Bronchitis and asthma. | 18 dys. | Buried under parapet of trench Nov., '15. | 18/5/16 | 18 | Cured. Camp for duty. | | |
| 29 | Driver. | 23 | Neurasthenia. | 2 mos. | Shock and exposure in Balkans. | " | 11 | Cured. Sent to England. | | |
| 30 | Pte. | 40 | " | 2 " | " | " | 8 | Cured. Camp for duty. | | |
| 31 | Rfsmn. | 34 | Contraction from old fracture, tib.-fib. | — | " | " | " | " | " | |
| 32 | Pte. | 32 | Trench shins. | 3 mos. | Date of fracture not ascertained. | " | 41 | Walks well, little pain. Sent to camp. | | |
| 33 | " | 23 | Psychasthenia very severe. | — | Shell shock. | 18/5/16 | 10 | Cured. Sent to England. | | |
| 34 | " | 21 | Sciatica. | — | — | — | — | — | — | |
| 35 | " | 25 | Neurasthenia. | 17 mos. | Started on arrival in Malta. In Dec. '15 fell and was unconscious 1 hr., then in hospital for 14 weeks. | 21/5/16 | 15 | Cured. Returned to duty. | | |
| 36 | " | 43 | Synovitis of R. knee. | 2 " | Fell down a hole in March in Balkans. | " | 38 | Rel. Leg straight; walks, little pain. Sent to camp. | | |
| 37 | Spr. | 21 | " | 2 " | Twisted knee in March in Balkans. | " | " | Leg straight; walks, little pain. Sent to camp. | | |
| 38 | Pte. | 30 | Trench shins. | 11 wks. | Exposure in Feb., '16. | 22/5/16 | 13 | Cured apparently. Sent to camp. | | |
| 39 | " | 31 | " | 10 " | Exposure in Feb., '16, in Balkans. | " | " | " | | |
| 40 | " | 31 | " | 10 " | " | " | 40 | Shins and colitis cured, still weak. Returned for disposal. Compensation restored. Returned to duty. | | |
| 41 | " | 20 | V.D.H. Mitral. Failing compensation. | 2 mos. | Acute rheumatism in childhood. Says heat of Malta has made him break down. | " | 14 | " | | |
| 42 | Gnr. | 22 | Hysterical. | — | — | — | — | — | — | |
| 43 | Pte. | 42 | Trench shins. | — | — | — | — | — | — | |
| 44 | " | 41 | " | 2 mos. | Exposure in Balkans. | 1/6/16 | 10 | Cured, happy. Returned to duty. | | |
| 45 | Sgt. | 30 | Neurasthenia. | 8 " | Had nervous breakdown five years ago. Penicula revived trouble. | 27/5/16 | 9 | Cured. Returned to regt. | | |
| 46 | Gnr. | 38 | " | 15 yrs. | Dates from 8. African War. | 3/6/16 | 8 | Cured. Returned to duty. | | |
| 47 | Sgt. | 45 | " | 3 mos. | No history of shock or accident. | 4/6/16 | 15 | Cured. Returned to regt. | | |
| 48 | Pte. | 37 | Chronic rheumatism. | — | — | — | — | — | — | |

[illegible]

THE LUETIN REACTION IN SYPHILIS.

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Noguchi's luetin consists of killed cultures of the *Treponema pallidum* emulsified with the media in which they have been cultivated. The use of this preparation in the diagnosis of syphilis is analogous to that of tuberculin in von Pirquet's test for tuberculosis; that is to say, if it be injected into the skin during certain stages of syphilitic infections it produces a cuti-reaction.

Noguchi's first experiments were made with rabbits artificially infected with syphilis and, led by the encouraging results which he obtained with these animals, he employed his preparation in the detection of the disease in man. He found that, in the majority of normal persons, 24 hours after the injection a small erythematous area appeared at the point of inoculation, which subsided in 48 hours. On the other hand, in the skin of syphilitic persons the injection of luetin frequently produced certain well-defined lesions of which he distinguished the following three forms.

1. *The papular form.*—An indurated papule, 5 to 10 millimetres in diameter, appears in 24 to 48 hours. The papule increases until the fourth or fifth day, after which it subsides gradually and disappears by the end of the second week.

2. *The pustular form.*—The reaction pursues the same course as the papular form until the fifth day, when, instead of becoming smaller, it increases in size, the central portion softens, and a vesicle forms which rapidly becomes pustular. This ruptures, and a scab forms which falls off in a few days. There is a wide range in the intensity of this reaction. Noguchi found that this form occurred almost constantly in tertiary syphilis and also in cases of secondary and hereditary syphilis which had been treated with salvarsan.

3. *The torpid form.*—In rare instances, though no positive result follows the injection during the first ten days, at the end of that time, or after an even longer interval, a pustular reaction occurs.

Noguchi found that in syphilitics the reaction varies according to the stage of the disease and the treatment which the patient has received. In untreated primary and secondary cases the result is generally negative; occasionally there is a papular reaction. In secondary cases treated with salvarsan the result is positive in more than 70 per cent. In tertiary and hereditary cases the reaction is intense and almost constantly positive.

The sample of luetin which was employed in the investigation under consideration was received from Dr. Noguchi on June 13th, 1914. The first injections were made four days later, and the series of inoculations were completed on August 12th.

As a control to the luetin an emulsion was made which consisted of the same constituents as that preparation except that it contained no *treponemata*. It was prepared according to Noguchi's original method. Two per cent. agar-medium was ground up in a mortar and aseptic fluid added until a mixture was obtained which passed readily through a fine hypodermic needle. Carbolic acid was added to the amount of 0.5 per cent. The fluid was put up in glass capsules, each containing 0.5 c.c., and these were heated for one hour at 60° C.

In accordance with Noguchi's instructions, the test was applied in the following manner. The skin of both forearms was rubbed with pledgets of cotton-wool soaked in a solution of lysol. The injections were made, not subcutaneously, but into the superficial layers of the skin, by means of a tuberculin syringe armed with a very fine needle. A successful inoculation raises the epidermis in the form of a flattened papule, whiter than the surrounding skin, very much like a "nettle-sting," and of about the same duration. In each instance about 0.07 c.c. of equal parts of luetin and salt solution were injected into the left forearm and a corresponding amount of the control emulsion into the right.

The patients among whom this investigation was carried out were all Asiatics (chiefly Chinese) of the coolie class. They were inmates of the Federated Malay States Government hospitals, and I am indebted to the medical officers in

charge of these institutions for permitting me to undertake this work in their wards. Two groups of patients were examined: (1) a group of persons who were either under treatment for syphilis or were believed to have suffered from that disease; and (2), as a control to the first, a number of persons suffering from diseases other than syphilis.

TABLE I.—Results of Luetin Reaction in a Group of 130 Syphilitics.

| | | | | | |
|-------------------------------------|------------|-------------|-------|-------------|-------------------------------------|
| Primary (9 cases, 33% positive.) | | Negative 6 | | Positive 3 | Papular 3 Pustular 0 |
| Secondary (42 cases, 57% positive.) | Active ... | Negative 15 | | Positive 21 | Papular 12 Pustular 9 |
| | Latent ... | Negative 3 | | Positive 3 | Papular 2 Pustular 1 |
| Tertiary (73 cases, 70% positive.) | Active ... | Negative 13 | | Positive 34 | Papular 20 Pustular 14 |
| | Latent ... | Negative 9 | | Positive 17 | Papular 6 Pustular 9 Torpid 2 |
| Doubtful (6 cases, 1% positive.) | | Negative 5 | | Positive 1 | Papular 1 Pustular 0 |
| | | Negative 51 | | Positive 79 | |

The results of the test as applied to the first group, which consisted of 130 individuals, are shown in Table I., where it can be seen that in 79 cases the reaction was positive and in 51 it was negative. The proportion of positive results was least in primary syphilis, greater in secondary, and greatest in the tertiary stage of the disease. In primary syphilis 3 out of 9 reacted positively; in the secondary stage, 24 out of 42; and in tertiary syphilis, 51 out of 73.

As is shown in Table I., the most common form of positive reaction was the papular type. This was the case in every stage of syphilis, except the latent tertiary form, in which there were only 6 papular reactions out of 17 positive results. Among these 17 were included two torpid reactions which occurred in a couple of old men from an infirmary. They both denied that they had ever suffered from syphilis, and both of them gave negative Wassermann reactions; one was blind from old ophthalmia, and the other had many scars which looked like the marks of old syphilitic sores. In the first case the reaction appeared on the fourteenth, and in the second on the eleventh, day after the luetin had been inoculated. One of these patients had been tested about a year before with a different sample of luetin, and on that occasion also he gave a torpid reaction.

In the negative cases the marks of both the luetin and the control punctures had disappeared in about 48 hours. In most of the positive cases a small red papule commenced to appear on the third day at the site of the luetin inoculation. This papule increased until the fifth or sixth day, when it was about the size of a pea. In the papular form the lesions subsided gradually and disappeared at the end of the second week. In the pustular form a red areola appeared round the papule and the centre became cyanosed and softened on about the sixth day. On the eleventh or twelfth day the resulting pustule usually ruptured and discharged a curdy, watery fluid, after which it quickly dried up under a scab and left a pigmented patch which gradually faded. In several instances the contents of these pustules were drawn off with an aspirating syringe and inoculated on to agar, but the latter always remained sterile.

In 4 of the secondary and 5 of the tertiary cases there was a reaction at the site of the control inoculation. In 7 instances this reaction was of the papular type, while

TABLE II.—Results of the Wassermann Reaction in 109 Patients belonging to the Syphilitic Group.

| Stage of syphilis. | In agreement with luetin reaction. | Not in agreement with luetin reaction. | |
|--------------------|------------------------------------|--|-------|
| Primary | Positive ... 2 | 4 | = 6 |
| | Negative ... 0 | 1 | = 1 |
| Secondary | Positive ... 19 | 10 | = 29 |
| | Negative ... 2 | 5 | = 7 |
| Tertiary | Positive ... 25 | 10 | = 35 |
| | Negative ... 8 | 23 | = 31 |
| Totals ... | 56 | 53 | = 109 |

at the point where the luetin had been injected there was a pustular reaction. The 2 remaining cases had pustules on both arms, but the pustules on the right (the control) side were smaller, and disappeared sooner than those at the site of the luetin inoculation. Noguchi

observed a similar phenomenon in 5 per cent. of his cases, and he ascribed it to that peculiar hypersensibility of the skin which sometimes occurs in syphilis and which Neisser has called "*Umschimmung*."

In Table II. the results of the Wassermann reaction are compared with those of the luetin test. Seventeen of the patients were not examined by the Wassermann reaction, because blood could not be obtained for the purpose, and in 4 other cases, where the reaction was negative, the diagnosis of syphilis was rather doubtful, so these were excluded. There remained 109 patients, belonging to the group of syphilitics, who were submitted to both the Wassermann and the luetin tests. The results were as follows:—

| | |
|--------------------------------------|----|
| (1) Primary syphilis, 7 cases. | |
| Positive Wassermann reactions | 6 |
| Positive luetin reactions | 3 |
| (2) Secondary syphilis, 36 cases. | |
| Positive Wassermann reactions | 29 |
| Positive luetin reactions | 24 |
| (3) Tertiary syphilis, 66 cases. | |
| Positive Wassermann reactions | 35 |
| Positive luetin reactions | 48 |

In the primary and secondary cases the Wassermann reaction was more frequently positive than the luetin test; but in the tertiary stage of the disease the reverse was the case and, as is shown in Table II., there were 23 cases of tertiary syphilis which gave negative Wassermann but positive luetin reactions.

There was no more agreement in the results of the two reactions than is accounted for by chance; in the series of 109 cases the results were the same in 56 and at variance in 53. This shows that the substance which gives rise to a positive Wassermann reaction is not the same as the substance which causes a positive response to an injection of luetin.

Of the 109 syphilitic cases 99 reacted positively to one or to both of the tests; in the remaining 10 both reactions were negative. As showing the danger of attaching too much weight to the results of these tests when the reactions are negative it may be profitable to consider these 10 cases in some detail. Two of them were in the secondary stage of the disease. One of them, who was suffering from iritis and polyarthritis, stated that he had had a primary sore a year ago. The other had been infected for three months; there was not the slightest doubt about the diagnosis, for he had a typical macular eruption and a healing chancre in which the *Treponema pallidum* was found. The luetin and Wassermann reactions in this case were both negative. The latter was found to be negative on three different occasions; once, 48 hours after an intravenous injection of neosalvarsan. Tested a fourth time, two weeks later, it had become faintly positive.

In the group of tertiary syphilitics there were 8 cases in which both the Wassermann and luetin reactions were negative. In 4 of these 8 only the scars of the disease remained, situated in two instances in the spinal cord with resulting paralysis, and in two upon the surface of the head and body; the process was no longer active and the primary sore dated back some 20 years or more. In all of the 4 remaining cases active lesions were present; 2 had ulcers, 1 a necrosed tibia, and the fourth was suffering from multiple gummata of the long bones. In the last case the diagnosis was beyond dispute. That is to say, in this series of 109 patients examined by the Wassermann and luetin reactions there was at least one case of active secondary syphilis and one case of active tertiary syphilis in which both reactions were negative.

As a control to the results of the luetin reaction in the group of 130 syphilitics, it was necessary to investigate its action on persons who were free from syphilis, and, for this purpose, the test was applied to a second group composed of 82 persons suffering from other diseases. This second group comprised 40 cases of beri-beri, 20 cases of malaria, and 22 of leprosy. Eight of the beri-beri patients, 4 of the malaria patients, and 7 of the lepers either had scars on the penis or gave a history of syphilis. The Wassermann reaction was positive in 4 of the cases of beri-beri, and in 2 of the patients who were suffering from malaria. Of the 22 lepers, 13 gave positive Wassermann reactions, but several of them had been selected for the luetin test on this account. All of the 82 patients in this control group reacted negatively to luetin with the exception of one man with beri-beri who had contracted syphilis ten years before.

It appears, then, that the action of luetin is specific: positive results occur only in syphilis; but in cases of this disease the proportion of positive reactions observed here was much smaller than that obtained by Noguchi.

It may well be that imperfect storage had impaired the reliability of the sample of luetin employed in this investigation. The efficiency of luetin, in the tropics at least, appears to be impaired by keeping. If the preparation could be kept continuously in a refrigerator, as Noguchi recommends, it is possible that this deterioration might be avoided. In a former investigation the specimen of luetin employed was nine months old and had been exposed to varying temperatures on its journey from New York to the Federated Malay States. Noguchi has stated that when luetin is examined under the dark-ground microscope it is seen to contain about 70 dead *T. pallida* in each field, but in this old specimen not more than a tenth of that number could be recognised, and when it was re-examined three months later the number of organisms had become still further reduced. In the present investigation the sample of luetin employed was about one month old when the series of inoculations was commenced, and three months old when it was finished. It contained about 35 *T. pallida* in a field (1/12 objective and No. 6 ocular). It was stored in a refrigerator, except when it was used in country districts; but on its journey through the post, from the Rockefeller Institute to Kuala Lumpur, it must have been exposed to varying temperatures and it appears to have deteriorated. Such sensitiveness to conditions of temperature detracts from the utility of luetin.

Difference of treatment may also have been a factor in producing discrepancy between the results of luetin inoculations here and those obtained by Noguchi in America. As a result of his investigations into the effect of antisyphilitic treatment upon the luetin reaction Noguchi has concluded that: (a) mercurial treatment may bring out the reaction in those cases in which it has not yet become positive, but such treatment has little or no effect upon the reaction when it has once developed; (b) salvarsan acts very powerfully in bringing out the reaction. Its subsequent continued use may eventually cause the reaction to become negative; probably by destroying the spirochaetes and curing the patient.

As the luetin reaction is influenced by treatment it is clear that uniform results will not be obtained in places where there is a great divergence in the lines of treatment adopted. One quarter of the cases investigated by Noguchi had received injections of salvarsan, and a large proportion of the remainder had undergone a thorough course of mercury. The treatment of syphilis on modern lines has not yet been adopted in the Government hospitals of the Federated Malay States; only 6 of the 130 syphilitics examined by means of the luetin reaction had received injections of neosalvarsan, and in only 2 of these cases had the injections been repeated. Six patients had been treated with mercurial inunctions, four with mercury powders and two with injections. The remainder of those who were under treatment had been given small doses of the perchloride of mercury (0.003 to 0.004 gm.) in the form of the liquor hydrargyri perchloridi of the British Pharmacopoeia.

Conclusions.—The results of the luetin test in the group of syphilitics examined in the course of this investigation were not so frequently positive as in the cases examined by Noguchi and other observers in America. This divergence of results is probably due to: (1) the deterioration from storage of the sample of luetin employed here; (2) differences in the methods of treatment in force in the Federated Malay States and the United States respectively. No positive reactions were obtained in persons free from syphilis; they occurred in syphilitics only. The luetin test is so easily carried out that it would be of the greatest use in general practice if one could always decide, from the result of its application, whether a patient were, or were not, free from syphilis. Unfortunately this is not the case, for while a positive reaction is of great significance, a negative result does not exclude syphilis. When performed in conjunction with the Wassermann reaction the luetin test is of great value; in the early stages of syphilis the Wassermann reaction, and in the later stages the luetin reaction, is more constantly positive. In the great majority of instances one or other reaction is positive; but in a given case, even though both reactions be negative, syphilis is not absolutely excluded.

THE SURGICAL USES OF OZONE.

BY GEORGE STOKER, M.R.C.P. IREL., M.R.C.S. ENG.,
MAJOR, ROYAL ARMY MEDICAL CORPS.

THE accompanying tabulated statement of the results of the first 21 cases treated by ozone at the Queen Alexandra Military Hospital cannot be regarded as anything but satisfactory from every standpoint, be it humanitarian, scientific, or economic. The cases were, for the most part, those of cavities and sinuses in the femur and tibia. It is the experience of those who have seen a great deal of war surgery that such cases obstinately resist treatment and are apt to remain unhealed for months and years.

The treatment consists of the application of ozone to the affected parts; it is, therefore, necessary to have an apparatus for generating ozone which shall be portable and easily worked. The one I am accustomed to use is known as Andriolis' ozoniser. It is called into operation by a four-volt battery animating a $\frac{1}{4}$ -inch sparking Rhumkorff coil. The oxygen passes from a cylinder through the ozoniser, and in doing so comes in contact with a metal armature, the effect of this being to transform the oxygen into ozone.

Table of Wounds, Sinuses Treated by Oxygen and Ozone.

| No. | — | Nature of disability. | Pre-vious duration. | Dura-tion of treat-ment. | Result. |
|-----|--|--|---------------------|--------------------------|---------|
| 1 | J. B., Lincoln. | Compound comd. fracture of femur resulting in cavity $1 \times 1\frac{1}{2}$ inches and sinus $\frac{1}{2}$ inches deep. | 20 mos. | 2 mos. | Cure. |
| 2 | W., Lincoln.* | 2 large surface wounds on forearm 5×4 . | 6 wks. | 2 " | " |
| 3 | H. E. B., B. Surreys. | 3 sinuses opening from back of scapula, each 6 inches long. | 9 mos. | 2 " | " |
| 4 | G. G. T. | Ulcer on end of stump. | 3 " | 3 wks. | " |
| 5 | M., K.O.R.L. | Wound on shoulder. | 10 " | 4 " | " |
| 6 | M. | Sinus in tibia $\frac{1}{2}$ inches deep. | 12 " | 7 " | " |
| 7 | H. D., Scots Guards. | Ulcer on instep. | 24 " | 3 " | " |
| 8 | A. A. A., Canadians. | Cavity and sinus in femur, $2\frac{1}{2}$ inches deep. | 14 " | 2 mos. | " |
| 9 | F. G. B., Gren- adier Guards. | Two sinuses in leg, one 8 and one 5 inches long. | 8 " | 1 mth. | " |
| 10 | J. W., Gren- adier Guards. | Cavity in finger after whitlow. | 3 wks. | 8 days. | " |
| 11 | P. V., Suffolks. | Cavity and sinus, 2 inches deep, in left humerus. | 14 mos. | 3 wks. & 3 days. | " |
| 12 | G. C., R. Fusiliers. | Sinus in stump after amputation. | 6 " | 5 days. | " |
| 13 | T. C., D.L.I. | Wound in shoulder below clavicle, leaving sinus $2\frac{1}{2}$ inches deep. | 4 " | 16 " | " |
| 14 | Major M., R. Inniskilling Fusiliers. | Sinus in lower end of out- side of R. humerus $1\frac{1}{2}$ inches deep. | 10 " | 5 " | " |
| 15 | J. G., Seaforth Highlanders. | Ulcer in centre of amputa- tion flap. | 9 " | 3 wks. | " |
| 16 | Sister N., Q.A.M.N.S. | Large opening at back of right ear following 2 operations for mastoiditis. | 7 " | 3 " | " |
| 17 | W. B., Lifeguards. | Suppuration of eye socket after enucleation of eyeball. | 6 " | 3 " | " |
| 18 | Lieut. B., R. Warwicks. | Sinus leading down to right femur, 2 inches deep. | 7 " | 3 " | " |
| 19 | Lieut. R., Canadian Inf. | Trench gingivitis with ulceration of gums. | 3 wks. | 3 " | " |
| 20 | W. M., Hants. | Sinus and abscess cavity in amputation stump. | 6 mos. | 5 " | " |
| | | Total | 157 mos. 2 wks. | 18 mos. 2 wks. | |

* In this case treatment was discontinued for four weeks.
N.B.—I have only failed in one case, Major S. H. He was twice placed for fracture of the femur. The "plate" acted as a "foreign body."

The properties of ozone, which have a wonderfully healing effect, are, as far as one can say at present, three:—

1. It is a strong stimulant and determines an increased flow of blood to the affected part.

2. It is a germicide, which destroys all hostile micro-organic growth.

3. As the French chemist Hennocque has shown, it has great powers in the formation of oxyhæmoglobin.

The ozone is applied on the wounded surface or to the cavities and sinuses for a maximum time of 15 minutes, or until the surface becomes glazed. Ozone has the particular power of disclosing dead bone, foreign bodies, septic

deposits, &c. This, I believe, it does by destroying the granulations and micro-organic growths (presumably unhealthy) that are found in close contact with septic deposits, foreign bodies, or dead bone.

Cleansing and Dressing.

Wounds and sinuses, &c., are washed twice daily with boiled water and a dressing of dry gauze is applied. It must be observed that at first ozone causes an increase of the discharge of pus; later on the pus is replaced by clear serum, which at a still later stage becomes coloured reddish or pinkish. In open wounds it is necessary to strip off the parchment-like film surrounding the edges, which is composed of oxidised serum. This is easily effected by applying a hot compress for 15 or 20 minutes, after which the film can be easily peeled off with a dissecting forceps.

At present our knowledge of the effects of ozone is but small, but later I hope to bring before the medical public further satisfactory facts with reference to its working and results.

Clinical Notes:**MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.****PLACENTA PRÆVIA AND CÆSAREAN SECTION.**

BY A. G. TRESIDDER, M.D. LOND.,
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ONE meets only a few cases of placenta prævia in which the condition of both mother and child justifies the operation of Cæsarean section. This is more especially so in hospital practice, where such patients are usually admitted in a more or less advanced stage of labour and only after there has been a considerable loss of blood, a state of affairs which would obviously contra-indicate a major operation when other means of delivery are open to us.

In recent years it has been recognised that the best treatment for certain cases of placenta prævia is Cæsarean section, and the results obtained among these carefully selected cases have been very satisfactory both as regards the maternal mortality and that of the infants. The maternal mortality of placenta prævia treated on the ordinary lines is 4 to 8 per cent., and the average foetal mortality is 60 per cent. Munro Kerr says: "The best figures give 4 per cent. and 35 per cent. respectively, and they are as low as one can ever expect to reach with the present recognised methods of treatment." But in certain cases of placenta prævia, such as the one described below, Cæsarean section would, I think, justify us in expecting much better results than a maternal mortality of 4 per cent. and a foetal one of 35 per cent.

As regards the mothers, there seems no special reason why Cæsarean section performed in suitable cases of placenta prævia should not yield quite as good results as it does in cases of contracted pelvis, when the operation is performed under the best conditions, the maternal mortality then being 2.9 per cent. (Amand Routh). Berkeley and Bonney place the maternal death-rate of Cæsarean section, when this operation is performed under the best conditions, as "probably under 1 per cent." In well-selected cases of placenta prævia the maternal mortality should not, therefore, be greater than about 2 per cent., i.e., about half as great as we could expect from any other method of treatment. One other great advantage to the mother is a lesser risk of morbidity as compared with that which results from the necessary manipulations, often prolonged, which accompany delivery *per vias naturales*.

The foetal mortality must obviously be very greatly reduced by Cæsarean section, and the rate of 35 per cent. at the best would be reduced to one of about 5 per cent. Further, in most cases the mother should be as well able to nurse her infant as after normal delivery, a result which, because of some slight sepsis or as the result of hæmorrhage before and during delivery, is often denied to the mother who has been otherwise delivered.

Generally speaking, the operation of Cæsarean section in a case of placenta prævia is indicated under the following

conditions: (1) when the hæmorrhage has not been excessive and the maternal pulse is full and its rate not above 100 per minute; (2) when the cervix is undilated and appears to be unduly rigid, indicating that dilatation is likely to be slow and difficult, as is often the case in elderly primiparæ; (3) when the surgeon can be confident that there is no risk of sepsis from previous frequent vaginal examinations, &c.; (4) the pregnancy should have reached full term or very nearly so, and the foetal heart sounds must be good; (5) another factor which should influence the surgeon in deciding in favour of Cæsarean section is the co-existence of some disproportion between the size of the foetal head and the maternal pelvis; and (6), as in the case here described, when the parents are especially desirous of a live child. The following case will serve to illustrate these points:—

The patient, a Eurasian aged 32, was admitted under my care to the maternity department of the Sassoon Hospital, Poona, on Oct. 19th, 1915. She had been married 12 years, and the present was her first pregnancy. The last period ended on Jan. 11th, 1915; the probable date of confinement would be about Oct. 16th, 1915. The patient stated that she had had slight pains for about 36 hours; bleeding began a few hours before she came to hospital. No vaginal examination had been made previous to her admission to hospital. When I saw her she was having feeble pains at about half-hourly intervals. Her general condition was excellent, the pulse being full and its rate 80 per minute; the face was placid and the tongue clean and moist. On abdominal examination the child was found to be in the first vertex position and the foetal heart sounds were good. The pelvic measurements were normal. On vaginal examination there was still a definite and fairly firm cervix, which admitted one finger only; at the internal os only placental tissue could be reached.

Both the patient and her husband were very desirous of having a live child, and considering all the points of her case, I felt justified in advising abdominal section. Cæsarean section was therefore performed and a full-time live child was delivered. The bleeding from the placental site was somewhat excessive and for a moment rather disconcerting; it was certainly more than I had noted in cases of Cæsarean section in which the placenta was normally implanted. During the first few days after the operation there was a good deal of trouble from after-pains; otherwise the patient made an uneventful recovery, and both mother and child were discharged quite well on Nov. 27th.

My thanks are due to Lieutenant-Colonel A. Hooton, I.M.S., for permission to publish this case.

Poona.

LEFT FALLOPIAN TUBE FOUND IN LEFT FEMORAL HERNIA.

BY E. G. RENNY, M.R.C.S. ENG., L.R.C.P. LOND.,
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HOSPITAL, COLCHESTER.

I REPORT the following case as I can find no record of a Fallopian tube presenting in a femoral hernia.

The patient, aged 42, married, mother of three children, had noticed a lump in the left groin for 18 months. During the last five weeks it had become painful, and thinking it was a rupture she bought a truss and wore it. The effect of wearing the truss was to make the lump very painful and inflamed. She then asked me to see her. I found a painful swelling in the groin which, on account of the inflammation present, made the diagnosis uncertain. It was dull to percussion, not reducible, and had no impulse on coughing. No strangulation symptoms were present. The finger could be passed up the inguinal canal for a short distance. Rest was advised, and when the inflammation had subsided (on August 17th) I made an incision over the tumour. It proved to be a femoral hernia with somewhat thickened sac. It contained a considerable quantity of green fluid (under tension). Occupying the crural canal was a red, soft substance, which, when traction was made on it, proved to be the left Fallopian tube with its fimbriated extremity presenting. This was returned to the abdomen without much difficulty, and the sac was ligatured and excised.

Colchester.

ERRATUM.—In Mr. Irwin Moore's paper on the Operation of Laryngo-fissure Fig. 2 appears upside-down, giving the anæsthetist's and not the surgeon's view of the field. Mr. Moore points out, also, that Dr. Lack's views are incorrectly stated at the end of the article. Dr. Lack does not hold that impairment of voice would follow as described.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

Exhibition of Specimens.—*Concealed Accidental Hæmorrhage.*—*Acute Toxæmia of Pregnancy.*—*Cæsarean Section and Hysterectomy for Accidental Hæmorrhage.*

A MEETING of this section was held on Oct. 5th, Dr. G. F. BLACKER, the President, being in the chair.

Dr. W. S. A. GRIFFITH showed a Lipoma of the Broad Ligament, weighing 13 lb. At the operation the tumour was found to be retroperitoneal, extending from the right broad ligament to the under surface of the liver. The peritoneal capsule was incised, and the tumour was gradually enucleated from above downwards. The chief vessels were found down in the pelvis, where the tumour had opened up the broad ligament. The cavity thus left was closed by a purse-string suture and the abdomen closed without drainage. The patient made a good recovery. Only two specimens of lipoma of the broad ligament appear to have been hitherto recorded.

Dr. C. HUBERT ROBERTS showed a large Ureteral Calculus, weighing 275 grains. The patient, aged 30, had been in several London hospitals since the age of 17 with symptoms pointing to renal calculus or tuberculosis. The diagnosis of ureteral calculus or calcified gland was made by Dr. Roberts in 1914, when the patient was pregnant. After delivery she was not seen until June 9th, 1916, when she was admitted to the Samaritan Hospital. On laparotomy the right ureter was at once seen, much dilated and thickened, above the stone. The stone was removed, drainage being provided by making an opening in Douglas's pouch through to the vagina. The patient made an uninterrupted recovery.

Dr. ROBERTS (for Mr. FRANK BELBEN) also showed a large Vesical Calculus weighing 3½ oz., formed around a slate pencil, and removed by suprapubic cystotomy from a girl aged 17. A small stone was also present. Some difficulty was encountered, as the bladder was contracted round the large stone and the pencil had ulcerated into the bladder wall. The patient made a good recovery.

Dr. ROBERTS also showed an instrument invented by the late Dr. Wallace, of Liverpool, for opening Douglas's pouch per vaginam during an abdominal operation.

Dr. OUTHBERT LOCKYER showed a series of Calculi: 1. Small calculus removed from upper part of ureter; good recovery. 2. Two calculi removed from lower end of ureter in patient, aged 63, being operated upon for uterine fibroid and solid ovarian tumour. The entire ureter was removed. Convalescence prolonged by formation of perinephric abscess, which was opened and drained. 3. Calculus from a patient from whom Dr. Lockyer had previously removed uterus, part of rectum, and part of vagina for new growth—an adenomyoma.¹ The calculus had formed at the recto-vaginal junction in consequence of a ureteric fistula. It was removed per vaginam. 4. Large calculus 5½ inches in circumference removed from bladder of patient who had a vesico-cervico-vaginal fistula, following difficult labour; calculus was removed during operation for closure of fistula.

Remarks were made by Dr. ROBERTS, Mr. DOUGLAS DREW, and Dr. GRIFFITH.

Dr. A. J. MCNAIR read a short communication on a case of entirely Concealed Accidental Hæmorrhage, with Intraperitoneal Bleeding.

Mr. CARLTON OLDFIELD and Mr. REGINALD HANN related a case of Acute Toxæmia of Pregnancy with Accidental Hæmorrhage, Treated by Cæsarean Hysterectomy; Recovery. It was suggested that accidental hæmorrhage is in some cases, like the one reported, a symptom of pregnancy toxæmia, and the opinion was expressed that in severe cases of accidental hæmorrhage, in which the cervix is closed, the patient should be delivered by Cæsarean section.

Dr. W. FLETCHER SHAW read a paper on Cæsarean Section and Hysterectomy for Accidental Hæmorrhage. In a very few cases of accidental hæmorrhage no method of treatment has the slightest effect upon the uterine muscle, which

¹ Trans. Royal Soc. Med., 1915, viii., No. 5, p. 47.

remains relaxed and allows severe hæmorrhage to continue. Of the six cases described, five were treated by Cæsarean section and the uterus was removed at the same operation; in the sixth case the child was delivered and hysterectomy performed some hours later because of a persistent flow of blood which treatment was powerless to check. These patients were all in a critical condition at the time; three died and three made a good recovery. They were all multiparæ and all had a very large amount of albuminuria. In five there were large hæmatomata in one or both broad ligaments, and in two there was a large quantity of free blood in the peritoneal cavity which had evidently escaped through some abrasions in the peritoneal coat of the uterus. As all these patients had a large amount of albuminuria, which cleared up a few days after delivery, in all probability the toxæmia producing this also produced the hæmorrhage. Dr. Fletcher Shaw emphasised the fact that he advocated this method of treatment only in the very rare cases where the uterine muscle would not contract.

These papers were discussed by Dr. AMAND ROUTH, Dr. HERBERT SPENCER, Dr. H. BRIGGS, Dr. G. F. DARWALL, SMITH, Dr. MUNRO KERR, and Dr. HASTINGS TWEEDY.—Mr. CARLTON OLDFIELD and Dr. FLETCHER SHAW replied.

Reviews and Notices of Books.

Welfare Work: Employers' Experiments for Improving Working Conditions in Factories.

By E. DOROTHEA PROUD, B.A. Adel., First Catherine Helen Spence Scholar. London: G. Bell and Sons, Limited. 1916. Pp. 363. Price 7s. 6d. net.

THIS book belongs to the series of volumes issued under the editorship of the Hon. Pember Reeves, entitled "Studies in Economics and Political Science"; the series consists of monographs by writers connected with the London School of Economics and Political Science. Miss Proud's volume is introduced to the public by Mr. Lloyd George, and the Secretary of State for War points out that of all the changes which the great struggle has brought in its train none is more significant than the revolution in the structure of British industry, indicated by the fact that many private firms of manufacturers have submitted to a general control by the State. Similarly many workers, who would otherwise have been unable to exercise the necessary discretion, have desisted from the endeavour to regulate the supply and restrict the output of labour. These things are noted as most important indications of the change of temper and opinion which has overtaken us all during the great struggle for freedom.

Miss Proud studies welfare work from every standpoint. In the first part of the book factory legislation is considered in its relation to employers and employed, and in discussing the ideals of a welfare worker we find very well described the attitude assumed by many sincere champions of the working class in the presence of welfare workers. Welfare ministrations, it is feared, may sap the resolution of the workers, an easy content being produced, under which individuals become content with their own lot and callous to that of their fellows. As welfare work appears to pay both the employer and the employees, we may expect under its influences a contented community though it be within a discontented State, but we cannot think that any real support of the social instinct comes from the feeling that the right to grumble must be maintained. Miss Proud is in agreement with other social workers in believing that welfare work does not predispose industrial peace and is not incompatible with trades unionism.

In dealing with the relation of work to workers, with industrial environment generally, and with the provision of lavatories, cloakrooms, and rest rooms for the workers, the author is highly informing, and we hope that her words will be widely read. The health of the worker, which is the particular sphere of the welfare department, should be a matter of deep concern to all of us, and in particular it is essential that the health of our women workers should be safeguarded, for women are, as Miss Proud says,—

Habitually less thoughtful than men concerning their own health, and a mixture of mock modesty and ignorance commonly prevents them from consciously considering

themselves as potential mothers. Whatever changes may occur, the health of women workers must needs be of paramount importance to the nation. Their position in industry, even though partially safeguarded by legislation, is still unsatisfactory.

Miss Proud's remarks on wages and hours may not have any great novelty for those who have practical relations with the employment of labour, but the information is put well and justly, and those to whom the organisation of factory work is unknown will be able to read her words with full instruction. Under the heading incidental aids to welfare we come to a part of the book which is of more immediate medical interest; here, in a well-written section, factors that conduce to physical well-being—lodging, food, exercise, baths, and recreation—are considered. The facilities for recreation and social intercourse which are prevalent in various industrial centres are commended, but Miss Proud considers that, broadly speaking, it is well to leave the initiative in these matters to the workers, though the actual organisation has often to be taken out of their hands, the employers not infrequently retaining the control.

A series of appendices illustrate, among other things, the employers' influence on early factory legislation and their experiments in reduction of hours; and the development of a welfare department as seen in an individual outlined case. Specimen menus from factory dining-rooms and examples of printed forms used in various welfare departments help to complete the varied picture of factory life which is drawn in this interesting and competent book.

The Milk Problem in Indian Cities, with Special Reference to Bombay.

By LEMUEL LUCAS JOSHI, B.Sc., M.D., 'Municipal Analyst, Bombay. With a Foreword by JOHN A. TURNER, C.I.E., M.D., D.P.H., Executive Health Officer, Bombay Municipality. Bombay: D. B. Taraporevala, Sons, and Co. 1916. Pp. 232.

WHAT Dr. J. E. Lane-Claypon has done in this country by collecting all the important facts of milk and its hygienic relations Dr. Joshi has done for India, and his book is likely to remain for long the standard work on the subject. In the preface Dr. Turner alludes to the very unsatisfactory state of the milk-supply of the large towns in India which has existed for long enough, but to which attention is only now being turned. The milk, he states, is stored by the *gomlees* or indigenous agencies in dirty hovels, the brass containers are scrubbed with mud obtained from filthy sources, and milk is carried far in open cans with a floating wisp of dirty straw to prevent spilling. He expresses the hope that Dr. Joshi's work will, by placing the information in the hands of the public, enable them to coöperate with the authorities in obtaining better conditions.

The author begins with an account of Indian milch cattle and the milk-supply of Indian cities. An excellent series of plates illustrates the various breeds of cows and some of the conditions of stalling. The chemical composition of milk obtained from various sources follows and the proposed milk standards for India. The bacteriological examination of Bombay milk is then discussed and the adoption of a bacterial standard for India is suggested. The factors affecting the composition and purity of milk are dealt with, and then its relation to the public health, especially in regard to infantile mortality. Finally, remedial measures are given ample space, and are considered under the headings of economic, sanitary, and legislative.

We trust that the book may attract the attention which it merits and be a substantial factor in obtaining much-needed reforms.

European and Other Race Origins.

By HERBERT BRUCE HANNAY. London: Sampson Low, Marston, and Co., Limited. 1916. Pp. 491. Price 21s. net.

THIS is a very difficult book to read; an enormous amount of energy has gone to the making of it, but the huge mass of facts and suppositions which has resulted will not, we fear, attract the attention of any large audience, for readers will be puzzled by the author's method of approaching his subject, as well as by the somewhat indiscriminate and shapeless manner in which huge lumps of knowledge are handed out to them. We are not blaming the author for being obscure now and again or dry in this or that place, for his work is exhaustive, and the subject of race origins

can never be treated as a simple one. Mr. Hannay thinks, indeed, that the epoch we are living in is probably more portentous than any that mankind has yet witnessed, and we agree with him that under the influence of the war intellectual fetishes, before whose shrines learned and unlearned alike have knelt for generations, are, if not "shattered or tottering to their fall," considerably discredited as the collective wisdom of civilisation grows greater. He adds, however, speaking of these fetishes, that "some still command as successfully as of yore the blind unquestioning worship of the Many: for the Hierarchy whose place, power, and prestige depend upon the maintenance of these idols, are still strong—still disdainful of all who dare to whisper to their flocks aught of a creed that undermines or even challenges their own." This example of his style will show how difficult it is to understand exactly what is the meaning which he desires to convey.

The first and second sections of the book deal with the rise and developments of ethnic movements, in which we have the author's views of the origins of the Arabians, Jews, Dutch, and Germans, and the remarks upon the heterogeneous and artificial make-up of the last are historically sound. The third book describes the origins of the Scythians, the Scottish and Welsh, the Angles, Saxons, and Northmen, and various intermediate links in these nationalities. A long list of authors and works is given in support of the close array of statements of which the book is composed, and only thoroughly well-read ethnologists can form a just opinion as to how far the author has digested such masses of information properly and arrived at justifiable conclusions. To a medical audience the work, we think, will not prove very useful, while the many directions in which medicine can be associated with the study of race origins do not appear to have had attraction for the author.

MISCELLANEOUS VOLUMES.

THE increased demand for nursing owing to the war and to an awakening sense of the value of child life has led to much publication, and in the course of recent weeks we have received several books designed to facilitate the teaching of nursing and the related subjects of maternal and child welfare. Among those written for the trained nurse we may mention *Surgical and Gynaecological Nursing*, by EDWARD MASON PARKER, M.D., F.A.C.S., Surgeon to the Providence Hospital, Washington, D.C.; and SCOTT DUDLEY BRECKINRIDGE, M.D., F.A.C.S., Gynaecologist to the same institution. (London and Philadelphia: J. B. Lippincott Company. Pp. 425. Price 10s. 6d. net.) The authors attempt a summary of the procedures in general surgery and gynaecology of a nurse's professional work, and include in her scope a knowledge of infection, its pathology and nomenclature; minor technique, in its relation to posture; bandaging and the keeping of charts and records; the patient's comfort and welfare; and the operation and details of asepsis and instruments. A final section is devoted to the gynaecological dispensary, emergencies, the personal attitude of the nurse, and a useful epitome of some common surgical and gynaecological conditions set out in brief outline. The illustrations are numerous and informative.—*A Text-book of Physics and Chemistry for Nurses*, by A. R. BLISS, Junr., Ph.G., Ph.Ch., A.M., Phm.D., M.D., lecturer on chemistry and materia medica at the Grady Hospital Training School for Nurses, Atlanta; and A. H. OLIVE, A.B., A.M., Ph.Ch., Phm.D., lecturer on chemistry at the Hillman Hospital Training School for Nurses, Birmingham, U.S.A. (same publishers; pp. 239; price 6s. net), is another book from which the nurse may gain an elementary knowledge of science as it affects her work. The matter is necessarily condensed, but those portions of the subject which are of special interest to nurses are conveyed in a manner easy to be understood. The appendix contains a brief but clear exposition of the metric system, and there is a useful glossary.

As Mr. HAROLD CHAPPLE, obstetric surgeon to Guy's Hospital, points out in his Foreword to *A Text-book of Midwifery*, by JANE AITKEN (London: Ash and Company. Pp. 83. Price 1s. net), that in many text-books the facts are so skilfully concealed in a multitude of words that the average nurse or midwife finds it difficult to disentangle them. Miss Aitken's book consists of notes of lectures which she delivered in the capacity of chief midwife to the Nurses' Charity at Guy's Hospital and as superintendent of the District Nurses' Home at Gloucester, and it may well be

used as an aid to intelligent study and to supplement and revise oral instruction.—The training of a nurse in the care of the insane requires special teaching and experience, and in *Mental Nursing* (London: The Scientific Press, Ltd. Pp. 98. Price 2s. 6d. net), Dr. W. H. B. STODDART reprints some lectures from the *Nursing Mirror*, in order to give to a prospective mental nurse some idea of the work he or she contemplates, and to furnish those actually engaged in mental nursing with a practical guide devoid of academic details.—Considerations of ethics are very important for the nurse in her relation to her own kind and to the medical man, and the study should not be neglected during her student period. In *Studies in Ethics for Nurses*, by CHARLOTTE A. AIKENS, formerly superintendent of Columbia Hospital, Pittsburg (London and Philadelphia: W. B. Saunders Company. Pp. 320. Price 7s. 6d. net), we have a text-book which embraces the whole life of the nurse, designed to aid both teachers and students. In addition to general instruction, the chapters contain illustrative cases which may arise in the course of the nurse's career, a list of questions for discussion or review being added to each. The book is readable and contains helpful advice.

—*Urine Examination Made Easy*: A plan of examination with the common tests fully described by THOMAS CARRUTHERS, M.A., M.B., Ch.B. (London: J. and A. Churchill. Pp. 45. Price 1s. net), is the third edition of a little book which we have already commended to nurses, for whom it is primarily intended.

Voluntary Aid and Red Cross workers will find help from two little books by Miss ALICE SCOTT, published under the title of *Surgical Bandages and Dressings* (London: Percy Lund, Humphrys, and Co. Price 1s and 3s. 6d.). Both contain clear diagrams enabling anyone to make the various bandages required for wounded soldiers, while the larger book gives details of ward bags, slippers, shoes, and other things. Profits arising from the sale of these books will benefit the surgical branch of Queen Mary's Needlework Guild.—Another book for Red Cross workers is *Home Nursing*, by Miss E. NEWSOME (London: The Scientific Press, Limited. Pp. 159. Price 2s. 6d. net), which consists of lectures given to detachments of the British Red Cross Society. Miss Newsome, who has been a "special" school nurse for the London County Council as well as a health visitor and inspector of midwives in a county area, is an able lecturer and her *vade mecum*, which is intended for use in the home as well for Red Cross nursing classes, is thoroughly practical.—An excellent little book for class teaching is *A Short Course on First Aid in Accidents*, by Lieutenant-Colonel Sir JOHN COLLIE, M.D., and Major C. F. WIGHTMAN, F.R.C.S. Eng. (London: George Gill and Sons. Price 3d.) Though brief, the information which it contains is very practical.—A fine example of compression will be found in *A Compendium of Aids to First Aid*, by N. CORBET FLETCHER, M.B., M.R.C.S. (London: Bale, Sons, and Danielsson. Third edition. Price 6d. net), in which everything essential to first aid is simplified and tabulated. Charts and ingenious mnemonics appear on nearly every page. Colonel Cantile contributes an introduction, and we endorse his good opinion of the work.

Other more popular books call for brief notice. *Moore's Family Medicine and Hygiene for India*, Eighth edition (London: J. and A. Churchill. 1916. Pp. 672. Price 6s. net), is primarily intended for travellers and others in India who may find themselves far removed from skilled medical and surgical aid. The first edition, which obtained a prize offered by the Government of India in 1873, was written by Sir William Moore, Surgeon-General to the Government of Bombay. The present edition has been written by Major Cuthbert A. Sprawson, with the assistance of several other members of the Indian Medical Service, and incorporates recent advances in the knowledge of tropical diseases.—*A Handbook for Wives and Mothers in India*, by Dr MILDRED STALEY (Calcutta and Simla: Thacker, Spink, and Co. Pp. 344. Price 5s. net), is now in its second edition. The author's object is the prevention of disease in mothers and children during their sojourn in a tropical country, and her advice embodies the result of many years' experience in India. Particular emphasis is laid on the necessity for breast-feeding.—*To Wives and Mothers: How to Keep Yourself and Your Children Well and Strong* is a little pamphlet compiled by the Association of Infant Welfare and Maternity Centres, and published by the

National League for Physical Education and Improvement, 4, Tavistock-square, London, W.C., price 3d. It contains a series of wise counsels selected from the pamphlets issued by the association. Information concerning feeding and common ailments, such as is here contained, cannot be too widely disseminated.—*Life Saving in War Time* emanates from the Infant Welfare Propaganda Committee of the National League for Physical Education (London: Arthur Pearson, Limited. Pp. 112. Price 1s.). The pamphlet is a vigorous plea for the preservation of child-life, showing not only what has been done, what is being done, and what can be done in this direction, but also what the individual can do personally. This "campaign hand-book," as it is described, may well be in the hands of the public, for it cannot be too often reiterated that the child is the nation's most valuable asset.

New Inventions.

AN IMPROVED APPARATUS FOR DARK-GROUND ILLUMINATION IN THE EARLY DIAGNOSIS OF SYPHILIS, ETC.

At the present time the need for a really satisfactory plant for the detection of the *Spirochæta pallida* in the early diagnosis of syphilis is, I am sure, greatly felt. Now the most rapid and accurate method of detection is by means of the dark-ground apparatus, but the light which is used with this often fails to give sufficient definition. A good knowledge of optics will, no doubt, enable a comparatively feeble source of illumination to be used with satisfaction, but in routine work we do not desire to practise optics so much as to see the *S. pallida*.

With the object of obtaining a thoroughly reliable illuminant which is easily manipulated and always available without too many preliminaries, I have for some time past been working upon a design which is now completed and accessible to all, being of British manufacture and at a reasonable price.

The following are the special features of the apparatus:—
1. Extreme compactness and reliability. 2. Always ready for immediate use, and yet, if so desired, can be returned to the cupboard from consulting-room table or laboratory bench without being dissembled. 3. The hand-fed compensating arc lamp requires the minimum of adjustment. 4. Suitable for use on any existing electric supply—continuous or alternating current—coming within the range of 100–250 volts. 5. Contact is made from a wall-plug or the bayonet fitting of an ordinary electric lamp. 6. The arc projects a good steady light with ample reserve, rendering differentiation between *S. pallida*, *S. gracilis*, *S. microdentium* accurate, rapid, and comparatively easy. 7. Adapted for any type of microscope stage. 8. The price, approximately five guineas, is reasonable, and the upkeep, even for constant daily use, inexpensive. The carbons for the arc lamp are readily obtainable. 9. Each constituent part is capable of an ample range of movement, thus rendering perfect adjustment very simple.

I am indebted to Lieutenant-Colonel L. W. Harrison,

D.S.O., R.A.M.C., for having given me the benefit of his wide experience in this work, and for many practical suggestions which have helped me in the designing of this model, which is now installed in the Military Hospital, Rochester Row.

I would express my sincere thanks to the makers, Messrs. John Wrench and Sons, 50, Gray's Inn-road, for the prompt and careful manner with which they have carried out my instructions.

CLAUDE H. MILLS.

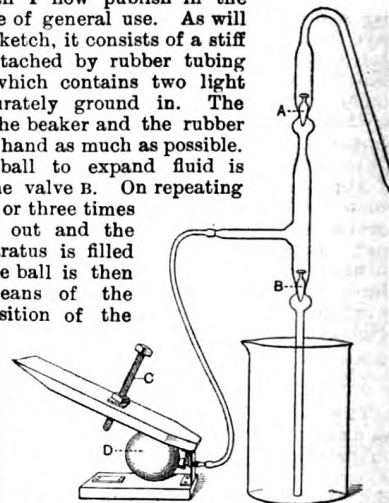
Camden-place, W.

AN AUTOMATIC DELIVERY APPARATUS FOR FLUID MEDIA.

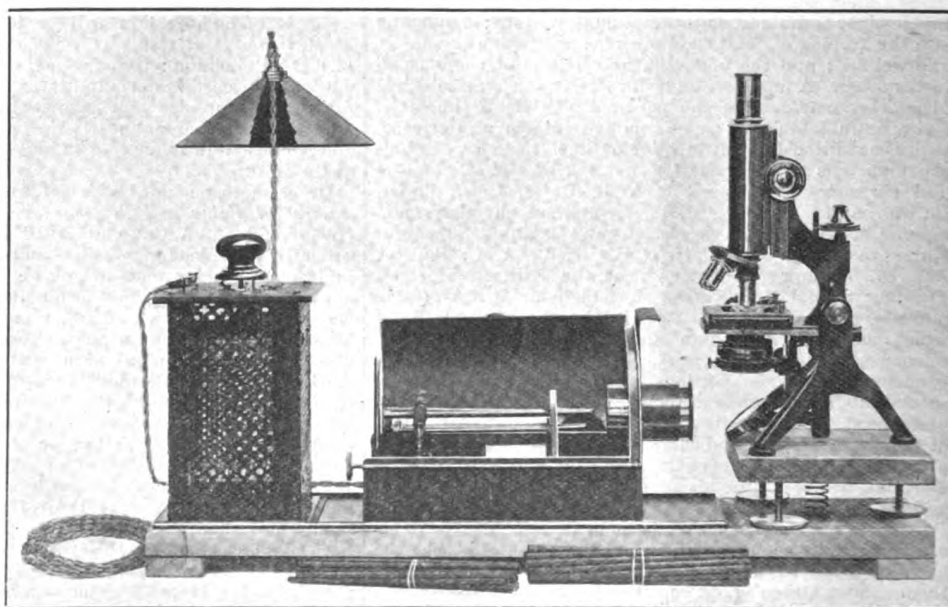
(From the Biochemical Laboratory, Cambridge.)

DURING the course of bacteriological work undertaken for the Medical Research Committee it was necessary to tube a given amount of broth. For this purpose I devised a piece of apparatus which I now publish in the hope that it may be of general use. As will be seen from the sketch, it consists of a stiff rubber ball (D) attached by rubber tubing to a glass part, which contains two light glass valves, accurately ground in. The fluid is placed in the beaker and the rubber ball is squeezed by hand as much as possible. On allowing the ball to expand fluid is sucked up past the valve B. On repeating this operation two or three times the air is driven out and the whole of the apparatus is filled with the fluid. The ball is then compressed by means of the board and the position of the screw (C) is found which results in the delivery of the desired amount. Delivery should be made by an even pressure applied as uniformly as possible. It is important to keep the length of rubber tubing as short as possible and to use thick-walled pressure tubing. Under these conditions the volume delivered is almost independent of the rate of compression of the ball. The apparatus can be obtained from Mr. C. H. Nicholl, 1, Mackenzie-road, Cambridge.

SYDNEY W. COLE, M.A.,
University Lecturer in Medical Chemistry, Cambridge.



The Apparatus for Dark-ground Illumination.



On the left: resistance. In the middle: hood of cover laid back to expose the compensating arc lamp which travels in exact alignment along runners on the base-board. A lens set in an adjustable sleeve is seen projecting. On the right: adjustable stand for the microscope.

THE LANCET.

LONDON: SATURDAY, OCTOBER 21, 1916.

The Conference of Medical and Panel Committees.

THE Conference of representatives of Local Medical and Panel Committees of the British Medical Association will have opened its deliberations before the present number of THE LANCET appears, but a glance at the list of matters to be submitted for consideration¹ will show that definite conclusions are not likely soon to be arrived at. Among the topics included for discussion not the least important will be those arising out of Memorandum 229/I.C. recently issued by the Insurance Commissioners as a result of a conference with the medical members of the Advisory Committee and after further consultation with representatives nominated by the Insurance Acts Committee of the British Medical Association. The object of the Memorandum is to remove misapprehensions with regard to the present system of remunerating practitioners in respect of their services under the Insurance Acts, and to give them the opportunity to understand clearly the system in use. Criticisms are frequently launched in respect of remuneration as affecting medical practitioners, and complaints are made of injustice to groups or to individuals which involve the statement that the medical profession is not receiving what it was promised when National Insurance was introduced. In order to deal fully with this position the Commissioners set out their considered summary of what that promise was, and then proceed to explain the system adopted for fulfilling it. A clear understanding of the effect of his bargain is necessary for anyone who enters into a contract if he would charge the other party to it with failure in carrying out his obligations. For this reason a careful study of the Memorandum referred to is recommended to everyone who is not prepared simply to enter into the prescribed agreement and then to accept without question such remuneration as may subsequently accrue to him. The two essential facts to be borne in mind in respect of the income which any medical man may expect to derive from panel practice are to be gathered from the opening paragraphs of the Memorandum. They are, that the full annual sum to which he is entitled in respect of an insured person on his lists is only due if and when the liability to attend that person has lasted for a full year. If, for example, the patient has died or removed himself to another district after nine months, the amount due is three-quarters of the one year's fee and not the whole of it.

Secondly, the amount actually paid in respect of the patients of any medical man in any year does not take into account each removal by death or otherwise of a patient from his list or each new addition to it, with the exact date of the incident. For example, he is not paid 362/365 of the annual sum due per patient in respect of a particular patient who has gone elsewhere after living for 362 days in his district, because to obtain and to apply such nice statistics in every case would be a task beyond the powers of those administering the Acts; it would entail something in the nature of a daily census of the insured population. In the words of the Memorandum, "The data for this direct method of calculation being unavailable, it was necessary to adopt some indirect method of calculation which would yield the same result, but based upon the use of data which could in practice be obtained." "The object of the Commissioners," to quote again from their Memorandum, "in framing the methods which they have from time to time adopted for calculating the payments to be made in respect of medical benefit, has been essentially that of devising a formula of a practical kind, which taking account of data which could in practice be obtained, shall at the same time yield, both to the profession generally and to individual doctors, the sum to which they are entitled under the general bargain."

The Memorandum proceeds to deal in detail with the three main heads into which its subject naturally divides itself, these being in effect the stages through which the money from various sources must necessarily pass before reaching the pocket of the medical practitioner on the panel. The funds applicable from all sources, including the amount collected from each society in respect of its membership, have first to be gathered together by the Commissioners; secondly, to be distributed among the Insurance Committees; and, thirdly, to be distributed by the Committees to the medical men on their panels. The methods by which calculation is made of the amounts distributable to individual Committees and to individual practitioners are set out fully in the Memorandum, and would be rendered less, rather than more, clear by any abbreviated summary here. They will, no doubt, be studied with interest, and the principle followed will be better understood in future by those who, in trying to protect themselves under their contracts with Committees, have found themselves baffled by the difficulty of understanding the procedure followed. The information has been there, no doubt, for those who cared to investigate, but it has for the first time been made plain to anyone having an hour to bestow on its consideration; and it is a little singular that the explanation now given was not prepared and published sooner. The general plan followed is explained and defended in the Memorandum, and its retention may be considered certain unless a system showing a very obvious prospect of better results can be proposed. Improvement in detail so far as it can be effected is promised, and it is suggested that steps are possible for rendering more accurate lists and index registers. War has naturally had an

¹ See THE LANCET, Oct 14th, 1916, p. 688.

adverse effect upon accuracy in these, and indeed upon the whole system, and although the Commissioners decline to admit that there is serious cause of complaint, the question of the lists in munition areas is evidently receiving their attention. This is one of the matters which must be discussed and settled now, even though we are in the midst of the war, because as soon as peace is restored the cause of complaint will disappear. There is beyond question a large influx of insured persons into munition areas, and, apparently, while they are well they remain in the list of their former doctors; it is only when they are ill that they take steps to be transferred to the doctor in the munition area. The Commissioners tell us that a large proportion of munition workers leave the munition area and return home directly they fall ill, and that this has a material bearing upon the contention that the doctors of munition areas are prejudiced by the present position. We are a little sceptical as to this, and should like to know the proportion of munition workers who retain their former homes when going to a new district, and who return thither so promptly on feeling unwell that they do not have time to consult a medical man in the munition area. This is a matter to be threshed out with a view to speedy settlement, in spite of the universal desire to avoid discussion and controversy while the nation is at war. In other respects the Memorandum appears to invite criticism and suggestion while insuring the relevancy of these to the actual facts of insurance administration.

Of other matters which we understand to be before the Conference the most important would appear to be the effect of the clause to be substituted for Clause 3 of the conditions of medical service in Schedule I. of the Medical Benefit Regulations, 1913. The provision of consultant medical service in insurance practice upon an extended scale is indicated, and the Memorandum (227/LC.) issued to Insurance Committees on the subject is silent as to any increase of the ordinary practitioner's remuneration for what may prove to be a substantial increase in the work to be done. Paragraph 2 of the Memorandum refers to Clause 3 mentioned above, as requiring the panel doctor to advise the patient as to steps which he should take if in need of specialist or consultant service, but adds that this requirement is by no means exhaustive of his professional duties towards his patient, duties "which panel practitioners would themselves admit to be inherent in the professional relation of general practitioner to consultant or patient." The cases in which consultation has taken place are described as "comparatively rare," but the performance in connexion with them of professional duties, "such as furnishing particulars of the patient's clinical history or specimens for laboratory examination," is treated as if it were a matter of course, now to be made for the first time the subject of formal regulation. The medical profession has worked already for some years under an insurance system which it has done its best to render genuinely beneficial to its patients, though the spirit of medicine, as idealised

by Dr. MITCHELL BRUCE in his address on another page, cannot flourish easily in such environment. But medical men are familiar with the conditions which panel service has hitherto implied, even if they have not understood the financial side of their contract. The performance, however, of certain admittedly desirable or necessary additional work in connexion with "comparatively rare cases," does not imply willingness to undertake the same duties gratuitously under what the Memorandum defines as "an organised provision of expert services now in process of development." The development contemplated by the Commissioners may be considerable, or the employment of expert services may in practice extend beyond the original intention of those responsible for the innovation. The Memorandum appears to have in view the introduction of expert services only for the treatment of venereal disease and of disabled soldiers and sailors discharged from service, but even within the limits thus suggested the increase of duties imposed will be grave. Acquiescence, therefore, without full inquiry would be dangerous in itself, and even more so as a precedent for the future.

The Interpretation of Laboratory Reports.

QUALITATIVE analysis of the urine has been practised for a century, but the methods of HELLER and of FEHLING were simple and could be used by the practitioner without a great outlay of time. The discovery of the bacillus, and especially of the tubercle bacillus in 1882, began to induce the clinician to seek the help of the laboratory worker; with the working out of the first serum reactions by BUCHNER and BORDET, 25 years ago, these relations became complete and final. It was impossible for the practitioner to find time to analyse the vital fluids of his patients as well as their symptoms, and the type of practitioner who placed no value upon the findings of the laboratory soon began to disappear. The pendulum doubtless swung too far, and for a time, when pathological work was new and seductive, there may have been certain minds which attached too high a value to this aspect and expected the clinical findings to fit in with the laboratory reports. There were men who could not see any clinical progress in a case until they knew what the white cells of the blood had to say about it. This type has also passed away. But there may still be some to whom the laboratory report is as a thing apart. To these, to take an example, the presence of albumin in the urine in a person presenting himself for life insurance connotes non-insurability. The urine is either free from albumin and the patient insurable, or albumin is present and the patient non-insurable. The Wassermann reaction is positive, the patient, therefore, has active syphilis; it is negative, and syphilis is excluded. Such an attitude is no longer consonant with the practice of the art and science of medicine. We draw attention on p. 723 to the

existing need of a link between laboratory and workshop; and the human body is the workshop of the pathological laboratory. The scientific practitioner must train himself in the interpretation of the laboratory report precisely in the same way as he has become trained in the interpretation of symptoms.

What conclusion, then, can the practitioner rightly draw when the laboratory report is negative? Is he to conclude the absence of the disease of which a positive report would have proved the presence? A negative Wassermann is a good case in point. The paper by Dr. WILLIAM FLETCHER on the luetin reaction, which appears in another column, clearly shows that this reaction and the Wassermann reaction, while both of them specific reactions in the sense that positive results only occur in syphilis—Dr. FLETCHER is excluding from consideration certain unusual conditions alluded to below—may fail to occur in any particular case of active syphilis. In the great majority of instances Dr. FLETCHER found one or other reaction to be positive; but in a given case, even though both reactions were negative, syphilis was not absolutely excluded. In his demonstration to the London panel practitioners last week Lieutenant-Colonel HARRISON took a good deal of trouble to elucidate the various interpretations to be placed on a negative Wassermann, according to the other findings in the case. In the first place, the case might be too early and the blood taken during the incubation period; a later report would then be positive. Or the patient might be, consciously or unconsciously, under the effect of antisyphilitic treatment; a short period of discontinuance of treatment would then result in the Wassermann becoming positive. Or the case might really be cured and the spirochæte infection finally abolished; here further assurance was to be gained by the employment of a "provocative" dose—that is to say, of a small intravenous dose of 0.2 or 0.3 gm. salvarsan (or of 0.4 or 0.5 gm. of neosalvarsan), with observation of the blood 7, 14, and 21 days later. Or, finally, the negative reaction might really be evidence of absence of syphilis, but only so on repeated examination and when all the other factors had been duly considered.

The positive Wassermann also has its various possibilities to consider. In the first place there are a series of conditions apart from syphilis in which the positive reaction has been found, most of them fortunately of rare occurrence or confined to tropical areas. Of these may be mentioned relapsing fever, yaws, trypanosomiasis, malaria and scarlet fever at the height of the fever, tropical ulcer, eclampsia, and certain skin diseases such as psoriasis and urticaria pigmentosa. The last-named are naturally the most likely to give rise to diagnostic difficulty, but the reaction in them is never strongly marked, and the difficulty may be avoided by using a non-syphilitic case of the same skin disease as a control. In the second place, the positive reaction may remain throughout life in cases which have not been efficiently treated at the outset. It is by no means an unheard-of thing for a robust man in late middle life to be found to have

a positive reaction, and more than a little consideration must then be given as to whether or no treatment is indicated. These are a few of the points to be considered by the practitioner in receipt of a positive or negative laboratory report. Where the report is quantitative other considerations arise. But in any case the interpretation of the report is a matter for judgment and experience, and it will help pathologist and clinician alike that each should know the working of the other's mind. The arguments must be so prepared, or opsonised, by the one as to be capable of ready assimilation by the other.

Annotations.

"Ne quid nimis."

HIGH SPIRITS AND JUVENILE CRIME.

Memorandum No. 13 of the Health of Munition Workers Committee on the subject of juvenile employment contains a careful summary of measures for dealing with the health of young workers, particularly boys, and incidentally some concrete suggestions for checking the delinquencies which result from the present abnormal conditions of work. High wages, the lack of healthy recreation, the absence of paternal control, all tend to thriftlessness, ill-discipline, and their resulting evils. In a previous Memorandum of the Committee (No. 2, Welfare Supervision) the appointment of welfare supervisors in all factories where women and girls are employed was recommended, and the results are known to have been satisfactory. The new Memorandum No. 13 sets out the duties assigned to "Boy Visitors" in the scheme of welfare supervision which has recently been initiated at the Royal Ordnance Factories at Woolwich Arsenal. The visitors get into personal touch with the lad, keep an eye on his work, his health, and his morals, and report anything requiring attention to the proper authorities. The Memorandum emphasises the need for sympathy and personal supervision and deserves the careful attention of all who are directly or indirectly concerned with the welfare of the developing lad. That lads do respond in a remarkable way to improved environment is evidenced by the fifty-ninth Report of the Chief Inspector of Reformatory and Industrial Schools of Great Britain, which has just been issued in the form of a White Paper (Wyman and Sons, price 2½d.). In this report Mr. C. E. B. Russell gives as an item of his creed: "I believe practically every boy to be at heart good," and is prepared with facts and figures to substantiate his optimism. The following extract from his report in regard to the war record of previous scholars speaks for itself:—

Up to March 1st, 1916, 29,920 of the old boys were known to be serving, 3884 in the Navy and 26,036 in the Army, of whom 1223 have been killed in action, 150 have died of wounds, 3501 have been wounded, 172 are missing, and 434 are known to be prisoners of war. Thirty-two boys have been mentioned in despatches, 69 awarded the D.C.M., 8 have been awarded the Russian Medal of St. George, 4th Class, 3 the French Médaille Militaire, and 1 the Croix de Guerre, while 19 have obtained commissions. Four boys have been awarded the Victoria Cross.

But the same spirit of adventure which has been responsible for these awards causes anxiety at home when it takes hold of the youthful crowd in the darkened streets at night, and in certain

neighbourhoods petty larceny has been reported with unpleasant frequency. In a letter to the *Times* last week Mrs. Humphry Ward suggests that local authorities should be obliged to provide a number of convenient play-centres for school children, as she believes that with some such outlet for high spirits the major part of the present difficulties would disappear. This is a view with which we agree. Whether under parental control or not, a large number of children have nowhere else than the street to exercise their minds and bodies. Open to grave objection at any time, this limitation is a direct incitement to misdemeanour with the increasingly early hour for lowering the lights. The Education (Administrative Provisions) Act of 1907 gave permission to local authorities to provide evening play-centres, and this provision might now be made compulsory.

THE PREVENTION AND TREATMENT OF VENEREAL DISEASES IN THE METROPOLIS.

THE London County Council is not going to delay in carrying into effect the recommendations of the Royal Commission on Venereal Diseases, and facilities for treatment are to be provided at the earliest possible moment. The problem of arranging these facilities throughout Greater London is a most difficult and complicated one, but it augurs well for the success of the scheme in hand that the Lord Mayor has convened a special conference of municipal and hospital authorities and representatives of the principal religious, educational, and social organisations to meet at the Mansion House on Oct. 24th. Addresses will be given by Mr. Herbert Samuel, the Home Secretary; Mr. Walter Long, the President of the Local Government Board; Mr. A. F. Buxton, the Chairman of the London County Council; and Lord Sydenham, the President of the National Council for Combating Venereal Diseases. Others who are announced to speak, besides the Lord Mayor, are Lady Barrett, M.D., Sir Thomas Barlow, and Sir Malcolm Morris.

WEIL'S DISEASE IN FLANDERS.

Weil first described the disease which bears his name in 1886. It is characterised by jaundice, pyrexia, hæmorrhages, and was apparently infectious, occurring either as widespread epidemics or in localised groups of cases. During the Gallipoli operations there was an extensive epidemic of jaundice, and it is possible that these cases may have included an anomalous type of the same disease; a recent paper in our columns on infective jaundice by Captain N. B. Gwyn, M.D., and Captain J. J. Ower, M.D.,¹ both of the Canadian Army Medical Corps, sufficiently shows the difficulties of diagnosis that may exist. The cause of Weil's disease was not known until 1914, when Inada and Ito reported the discovery of a spirochæta in the liver of a guinea-pig which had been injected with the blood of a patient suffering from this disease. The following year they concluded that such spirochætæ were the cause of Weil's disease. Later it was found that the blood of patients recovering from this disease contained protective substances against the spirochæta. Still later Japanese workers demonstrated the same spirochætæ in six specimens of patients' blood; in two cases which died on the sixth day of illness the spirochætæ were present in large numbers in the liver. They may also be found in the urine.

The source of infection is not definitely known, but it is possible, it seems, that skin abrasions may be a path, as well as the alimentary canal. Captain Adrian Stokes and Captain John A. Ryle report in the September issue of the *Journal of the Royal Army Medical Corps* details of some 15 cases of Weil's disease in Flanders. In two of the cases it proved possible to infect guinea-pigs with the blood with typical resulting lesions and evidence of the spirochætæ. The general clinical picture is this: The patients complain of weakness and general soreness. Frequently there is pain in the eyes. Vomiting is often marked; sometimes there is epistaxis. On examination neither liver nor spleen was enlarged; the stools were of normal colour. Jaundice is marked. The pulse-rate is slow in proportion to the pyrexia. All cases showed enlarged lymphatic glands, most frequently the pectoral group of the axillary glands. All cases showed an irregular pyrexia. In six cases in which a blood examination was made, in only one were the spirochætæ easily found; in another a single spirochæta was discovered. The spirochætæ are rather straight and with curves resembling those seen in *S. refringens*. Side-to-side movements were well seen, and they were usually grouped. Cultivation was not attempted. The authors conclude that the experimental facts are sufficient to show that the cause of epidemic jaundice in Japan and in Flanders is identical.

THE MEDICAL DEFENCE UNION.

WE have received the annual report of the Medical Defence Union, which shows that the work has been increased by the war, as a great many questions have arisen out of the circumstances in which civilian practitioners have taken commissions with consequent absence from their practices. Partnership deeds have required amendment and alteration, and in some instances temporary determination; plans have had to be made for grouping of practices, and a large number of instances have occurred in which the members have derived advantage from belonging to the Union by receiving advice on such matters. The wives of many officers on active service have sought the help of the Union on numerous occasions on questions arising out of difficulties with assistants or *locum tenentes* or National Insurance Committees, and such help has always been given. Many matters affecting military law and customs have been dealt with, and in one instance a threatened court-martial was dropped owing to the intervention of the Union. This probably accounts for the fact that applications for membership have been sent from the front and candidates' forms filled up and forwarded from the trenches or casualty hospitals or field or base hospitals. Many letters have been received from those on active service who desired the Union to act for them in an emergency which had arisen in the home practice. Advice has also been sought under the Military Service Acts as to enrolment, and the secretary has been in constant touch with the executive of the Central Medical War Committee. The National Insurance Acts closely engaged the attention of the Union during the past year, and much good work was accomplished not only on behalf of its members but in the interests of the profession at large. During the year 50 cases in this connexion were placed in the hands of the solicitor to the Union, including various

¹ THE LANCET, Sept. 16th, p. 518.

appeals on the subject of surcharge. These were all conducted successfully on behalf of the members concerned. Various appeals were carried to the Commissioners against decisions of Insurance Committees concerning the conduct of the panel practitioners, and in each case undertaken a successful issue resulted. The report of the solicitor, forms interesting reading, and demonstrates the great value of belonging to such a society. The officials of the society, especially the general secretary, Dr. A. G. Bateman, and the solicitor, Mr. W. E. Hempson, together with the council, are to be congratulated on another successful year of work.

THE METROPOLITAN WATER-SUPPLY.

WITH a rainfall of 2'40 inches, or 0'18 inch above the average mean fall for June, the purity of the Metropolitan water-supply was fully maintained during that month. All the samples of water collected at the different works were, generally speaking, clear, bright, and free from suspended matter. The results of chemical examination showed that all three raw waters improved in quality during the month, as judged by the albuminoid nitrogen, permanganate, turbidity, and colour tests, with the exception of raw Thames water in regard to turbidity and colour. All the filtered waters improved in quality during the month, as judged by chemical and colour tests. When compared with the 1915 averages the raw waters showed results better than their respective averages, and the same observation was made as to the filtered waters. In regard to bacteriological results, these were consistent with the degree of purity shown by chemical results, all three raw waters containing less bacteria than their respective averages, while the filtered waters, generally speaking, yielded satisfactory results. They contained no typical *B. coli*, even when 100 cubic centimetres of the water were examined.

THE EFFECTS OF ANTITYPHOID INOCULATION IN THE ITALIAN ARMY.

A FURTHER contribution concerning the morbidity and mortality of typhoid fever in inoculated subjects may be found in some interesting observations by Captain F. Ravenna and Lieutenant A. Azzolini, of the Italian Army Medical Department, published in *Il Policlinico* (Practical Section, Sept. 17th). Comparing the course of the disease in 30 inoculated and 30 non-inoculated subjects, they found that rose-rash was present in 13 of the former and 25 of the latter, the spleen was enlarged in all cases, profuse diarrhoea occurred in 8 of the former and 12 of the latter, while hæmorrhage and intestinal perforation were apparently uninfluenced by inoculation. Broncho-pneumonia and renal complications, phlebitis, and otitis were, on the other hand, less severe and less frequent in the inoculated, and with these relapses were also more rarely met with. With regard to the height, duration, and type of the temperature, it was evident that while among the inoculated slight attacks were markedly prevalent, severe forms were common in the non-inoculated. Researches on agglutination were not conclusive owing to the fact that many of the subjects examined had undergone a mixed inoculation, and also because agglutinins are present in the circulation even nine months after the injections. With regard to the existence of antibodies capable of fixing the complement in the presence of typhoid antigen, these

observers found that out of 20 inoculated there were 18 negative reactions and sometimes incomplete hæmolysis; out of 9 cases of typhoid non-inoculated there was one positive and 8 negative, and out of 24 cases which had been inoculated there were 4 positive and 20 negative reactions. It should be noted that in all the cases giving a positive reaction agglutination of Eberth's bacillus was also obtained, and this was moreover the case in many of those instances where there was a negative complement fixation reaction, so that there was an absence of a strict parallelism between these two sets of facts. In view of the large number of patients in whom a paratyphoid infection was ascertained or suspected, a definite opinion on the diagnostic value of this test cannot be given without further experiments with paratyphoid antigens, although Dean's observations tend to show the existence of a complement deviation analogous to what takes place by agglutination.

THE REGULATION OF PROSTITUTION AND OF VENEREAL DISEASE IN SWEDEN.

IN a series of annotations we have reviewed the measures proposed by the Swedish Royal Commission on Venereal Disease, and we have shown how practically every proposal has been criticised in various quarters. After collecting and analysing these criticisms, the Swedish Board of Health has published its own views on these proposed measures, of many of which it strongly disapproves. The Board of Health points out that the Commission's investigations have shown regulation and inspection to be ineffective in controlling venereal disease; yet the Commission seems to have compromised between the logical conclusions to be drawn from its investigations and the fear of completely discarding an out-of-date system of regulation. In the opinion of the Board of Health, the Commission should have had the courage of its convictions and, following the example of the authors of the minority report, should have expressed in its proposals the conviction that regulation, in whatever form, is of doubtful value. Instead of taking this logical step, the Commission has first laid bare the faults of regulation, and has then proposed compulsory measures which constitute merely a new form of regulation, deprived of the most offensive features of the present system, but retaining all the characteristics of a genuine system of regulation. The Board of Health further considers that the positive factors in combating venereal disease, which the Commission has investigated and discussed, are not very imposing. Indeed, the Commission's many years' labour would appear from this verdict to have given a negative result. There is, however, at least one point on which the Board of Health agrees in principle with the Commission, and that is with regard to punishing persons who knowingly convey venereal disease to others. As the spread of venereal disease is almost wholly due to promiscuous cohabitation, the Board of Health considers it perfectly justifiable to make it a penal offence for anyone suffering, or suspecting that he is suffering, from venereal disease in an infectious stage to indulge in promiscuous cohabitation. Such a penal law, it is urged, would undoubtedly be a powerful check on the spread of venereal disease; it should be clearly defined and incapable of arbitrary interpretation or elasticity of administration. The maximum punishment for habitual offenders should not be less than two years' penal servitude. The

Board of Health does not anticipate serious difficulties in securing a conviction under such a law. It is illustrative of the difficulties arising out of the reform of prostitution and attempts to suppress venereal disease that the Commission has been unable to issue a unanimous report, two of its members dissenting in many respects from the majority report; the Board of Health has also been unable to point a way to reforms endorsed by all its members.

UREA IN PLANTS.

THE occurrence of the enzyme urease, which readily converts urea into ammonium carbonate, in plants, and more particularly in the soy bean, a leguminous plant named *Glycine hispida*, has naturally led to the suggestion that urea is probably a constituent of the vegetable kingdom. The suggestion is interesting inasmuch as we have for long regarded urea as exclusively an animal product. In an interesting paper read by Dr. Walter G. Smith before the Section of Medicine of the Royal Academy of Medicine in Ireland, and now published in the Transactions of the Academy, urea appears to be a fairly universal constituent of plants. It occurs, at all events, to the extent of as much as 3.5 per cent. in ripe specimens of a fungus *Lycoperdon bovista*, and it has further been found in wheat, barley, maize, peas, clover, and beans. It has also been detected in endive, some species of cucumber, brassica, spinach, carrot and potato, and so, as Dr. Smith points out, we must recognise that plants, without the help of micro-organisms, can directly form urea as a product of nitrogen metabolism. Another link is established in this way between the metabolism of plants and animals. Professor Bayliss states that there does not appear to be any urea in the soy bean itself, for extracts of the seed do not yield any ammonia. He suggests that the germinating seed may contain the enzyme arginase which would produce urea from arginin. The urea on hydrolysis by urease would then serve as a nitrogen food for the plant. The action of urease is quantitative, and is now utilised in the accurate estimation of urea in urine, its conversion into ammonium carbonate admitting of alkalimetric methods. These observations are of great interest, as they not only break down once more an old distinction, but they throw a fresh light on the metabolism of nitrogen substances, and incidentally give us a new and accurate analytical procedure.

THE NOTIFICATION OF TUBERCULOSIS IN IRELAND.

AN Irish correspondent has called attention more than once to the curious fact that while tuberculous phthisis is frequently notified in Dublin it is quite rarely notified in Belfast. The population of each city being between a quarter and half a million and the numbers of notifications being nearly constant from week to week, it was obvious that some difference of practice must be present. The discrepancy is explained by a careful study of the Tuberculosis Order for Ireland, which differs in several essential respects from the General Order for notification of tuberculosis as issued by the Local Government Board for England on Dec. 19th, 1912. In the first place, the Irish Order applies solely to the form of tuberculosis "known as tuberculosis of the lung," and only to this when the medical practitioner in attendance considers

that the sputum discharged by the person suffering is liable to communicate the disease to other persons. Furthermore, notification is only required in case the person (1) habitually sleeps or works in the same room as any other person or persons not so suffering; or (2) is employed or engaged in handling, preparing, or distributing food intended for sale to the public. The person, therefore, who lives in one room readily escapes notification, and it is open to the practitioner, if he wishes, to arrange for the nursing of most of his cases in such a way that notification is not compulsory. Differences in individual practice may accordingly readily account for the different figures obtained in Belfast and Dublin, which give no real insight into the relative prevalence of tuberculosis in the two cities. Whilst notification as practised in Ireland may serve to call the attention of the public health authority to infectious cases occurring in unhygienic surroundings, it obviously cannot be expected to give a complete picture of the prevalence of tuberculosis in any area or district. Notification in Great Britain is gradually becoming a sound basis for the initiation of preventive and curative measures; it has resulted in tracking down an immense number of "contacts" in an early and curable stage and in linking the problem of tuberculosis ever closer with the housing problem. Ireland, with its high death-rate from tuberculosis, is equally in need of these measures and is unfortunate in possessing a less effective notification order.

THE THYMUS GLAND IN "THYMUS DEATH."

"Thymus death" is one of the unsatisfying and unsatisfactory diagnoses often made in cases of sudden death in infants and children. It is said that the patients have suffered from the condition entitled the status thymicus, status lymphaticus, or, to kill two birds with one stone, the status thymico-lymphaticus. Such sudden death may occur in many ways, and if we go briefly over very familiar ground it is only for the sake of clearness. In some infants, children, and young adults "thymus death" happens early in the administration of an anæsthetic. In others the symptoms are those of a sudden and fatal attack of shortness of breath, and the death is attributed to "thymic asthma." In a third group of cases the child dies suddenly in its sleep, in an attack of bronchitis or diarrhoea, or in the course of some other disorder such as rickets that had not been thought at all dangerous. Yet other varieties of "thymus death" have been described, with the result that the diagnosis has become suspect and is not recognised at all by many physicians, surgeons, and anæsthetists. Pathologists, on the other hand, are more inclined to accept it, perhaps because the discovery of an apparently enlarged thymus and an abnormally developed system of lymphatic glands and follicles offers a convenient explanation of the occurrence of sudden deaths that are otherwise inexplicable from the point of view of morbid anatomy. Alternatively, of course, these sudden deaths may be attributed to anaphylaxis; but here, again, the diagnosis is not wholly satisfying or demonstrably correct. The literature of the subject is very large, and has recently been added to by Dr. J. A. Hammar.¹ He notes that "thymus death" has very generally been attributed to hyperplasia of the thymic medulla, or else to a low ratio of the cortex to the medulla of

¹ Svenska Läkaresällskapets Handlingar, Stockholm, 1916, xlii., 887.

the gland. Dr. Hammar has made careful microscopical and numerical examinations of the thymus glands in 16 cases of sudden death in infants and children, the material being supplied to him by various Swedish colleagues. He gives details of the observations he has made, and also sets them out statistically in curves and tables. His attention has been devoted to the relative amounts of cortex, medulla, and interstitial tissue in the thymus glands, and also to the relative and absolute numbers of the Hassall's corpuscles in them, in view of the fact that "thymus death" has recently also been attributed to excessive "epithelialisation" (or deposit of Hassall's corpuscles) in the gland. Two of his 16 cases were instances of "true thymus death," 5 were patients with acute bronchitis, 2 had broncho-pneumonia, the others had rickets or were suffocated by mucus from the gastrointestinal tract in the air-passages, and 1 had tonsillitis. In all of them death was associated with some enlargement of the thymus gland. Dr. Hammar finds that the normal newly-born child has a thymus weighing from 9 to 22 grammes, and averaging 13 grammes. Such an average thymus contains about 800,000 Hassall's concentric corpuscles, the figure varying from rather less than half a million to a million and a third. Between the ages of 1 and 5 the average weight of the thymus is 25 grammes, the figure varying between 14 and 31 grammes; between these ages the average thymus contains about 1,100,000 Hassall's corpuscles, the extremes being 600,000 and 1,900,000. Summing up, Dr. Hammar comes to the conclusion that in cases of sudden death from internal causes in infants and children the thymus gland is, as a rule, of normal size and of normal histological structure. Even in cases of "true thymus death" there is nothing to indicate any functional abnormality of importance in the thymus gland; the thymus shows no constant abnormality in the quantity or proportion of its medulla; the histological variations found fall within the normal, established by examination of the thymus glands from infants and children who have met with accidental death. Dr. Hammar is inclined to search the endocrine glands generally for the cause of death in these cases and to absolve the thymus gland from all responsibility.

THE Acting Registrar of the General Medical Council is informed that an Order of the Privy Council postponing the elections of Direct Representatives, which would otherwise be held before the end of the year, may be expected in a few days.

At the first meeting of the session of the Section of Epidemiology and State Medicine of the Royal Society of Medicine on Friday, Oct. 27th, at 8.30 P.M., a paper will be read by Captain C. G. Moor, R.A.M.C., on the Work of a Sanitary Section at a Base. Any officer of the Army or Navy Medical Services or the Indian and Colonial Services will be cordially welcomed at the meeting.

ROYAL NAVAL HOSPITAL, STONEHOUSE.—The Medical Director-General of the Navy (Surgeon-General Sir Arthur W. May) recently visited the Royal Naval Hospital, Stonehouse, where he was received by Surgeon-General W. H. Norman. He inspected the medical and surgical wards and expressed his appreciation at the provision made for the sick and wounded patients. On the following day the Medical Director-General inspected the medical establishments at Devonport and Plymouth.

THE LINK BETWEEN THE UNIVERSITY AND THE FACTORY.

INTERESTING demonstrations were given in the Universities of Leeds and Sheffield last week of the facilities which the great technological schools of the Universities are offering for carrying out scientific research. It was announced that similar demonstrations would follow shortly at Manchester, Liverpool, and Birmingham Universities. Situated as the Universities of Leeds and Sheffield are in the midst of great industrial activities, it is encouraging to learn that the work of scientific research is being prosecuted on behalf of the manufacturers, and already some important examples of new advances may be definitely traced to the coöperation of the workshop and the University laboratory.

Sheffield has been severely handicapped by the serious depletion of its students eligible for the war, but in spite of this the work done in the engineering and metallurgical departments has been of the utmost importance to the nation in the hour of its trial. The pure science side of the teaching at this University, as the Dean of the Faculty of Pure Science explained, has been rapidly developed to meet any demands made either by the city, which has, of course, a large stake in the University, or by industry now or after the war is over. Schemes have been set on foot for the training of chemical engineers for which so great a demand exists at present, and of research chemists of a type so urgently in request by many firms engaged in the large chemical industries mobilised for war purposes. A new department of technology dealing with glass has been created which it is hoped will become national in character. This has been organised with the financial support of the Advisory Committee of the Privy Council for Industrial Research, of the Ministry of Munitions, and of the glass manufacturers on the one hand, and of the Sheffield University Council on the other. Suitable buildings for research work in glass technology are in process of erection, but in the meantime the work is being carried out with very promising results in the chemistry department. Amongst other work that has been taken up is the preparation of local anaesthetics formerly made exclusively in Germany, the provision of substitutes for materials formerly imported from the continent and largely used in local industries submitted by various firms. Altogether there are sure signs that the assistance which the University of Sheffield is in a position to give to trade and industry is being increasingly appreciated by the community.

At Leeds a most interesting demonstration was given in the various departments by the respective professors. The department of organic chemistry deals mainly with those branches of science which underlie many of the most important technical processes, and provides a training for a large number of students who desire preparation for the great variety of industrial processes dependent on chemistry, such as the manufacture of dyes, explosives, and drugs, and the leather-dyeing, coal-tar, and fuel industries. This department has been actively engaged in several directions in the service of the country connected with the war. At the request of the War Committee of the Royal Society this department undertook the preparation of novocaine and eucaine, and a sufficient supply of the former has been made already. The preparation of eucaine continues. The chloramines are prepared in these laboratories as well as the hypochlorite boric acid mixture, the manufacture of which on a large scale is now in the hands of several firms of chemical manufacturers. There was on view also a collection of British-made dyes and drugs produced since the war, which are rapidly forming the basis of new industries, and this afforded a remarkable ocular proof of British energy well directed. The collaboration of science and industry was further fully illustrated in a special technical department representing what was being done for the great leather industries. The work of the bacteriological laboratory of this department since the war has been devoted to the production of culture-media required by the hospitals for the isolation and identification of disease germs. Besides all this, the technical department is busily engaged controlling the output of toluene and benzene from coal-gas and making examinations of high explosives.

The recent visit made by a representative group of enquirers and observers to the Universities of Sheffield and

Leeds proved of a most interesting and instructive character, and there can be little doubt that the value of coöperation between science and industry is being rapidly appreciated. The old rule-of-thumb policy and practice of our manufacturers must eventually disappear, much to the advantage of the nation's prestige in the industrial field. Both at Sheffield and Leeds the visitors were received by the Vice-Chancellors respectively of the Universities, who rendered a scholarly account of what these centres of education were doing to raise the status of technology. In each case the party of visitors proceeded from the University to the great factories and works—steel, leather, and textiles—where they could see for themselves how the fruits of scientific research of the University were being utilised with the most valuable results. A magnificently important movement has been set on foot the consummation of which will enhance very considerably the welfare and prosperity of the nation.

For the most part the visitors represented a circle of scientific, technical, and trade journals forming a section of the Institute of Journalists, which body may be congratulated on organising a movement for informing the public of the practical progress that has been and is being made.

BACILLARY DYSENTERY AND B. ENTERITIDIS (GAERTNER) INFECTIONS.

THE following Memorandum records the extension of the supply of standards from the Department of Pathology at Oxford and is issued to meet the convenience of bacteriologists at military hospitals and assist the coördination of results obtained by different observers at different times and places. The Medical Research Committee have made arrangements for the preparation and supply of sterilised Standard Agglutinable Cultures and Standard Agglutinating Sera, for the diagnosis of certain intestinal infections by means of macroscopic agglutination tests.

The preparation of standard cultures and sera carried out in the Department of Pathology, Oxford, under the direction of Professor G. Dreyer, has now been extended to include *B. dysenteriae* (Shiga, Flexner, and Y.) and *B. enteritidis* (Gaertner), in addition to *B. typhosus*, *B. paratyphosus* A, and *paratyphosus* B. The standard cultures and sera will be supplied by the Medical Research Committee free of charge to pathologists working in connexion with military hospitals. Applications for the standard cultures or sera should be addressed to the Standards Laboratory, Department of Pathology, University of Oxford (telegraphic address, "Pathology, Oxford," telephone, Oxford 467).

To facilitate the performance of agglutination tests under service conditions or otherwise, a special outfit has been prepared. This consists of a special stand, dilution tubes, agglutination tubes, and two dropping pipettes, which can be obtained free of charge by pathologists working for military hospitals upon application to the Medical Research Committee, 15, Buckingham-street, Strand, W.C., or may be purchased from Messrs. Baird and Tatlock, 14, Cross-street, Hatton-garden, E.C., or from Messrs. R. B. Turner and Co., 9, Eagle-street, Southampton-row, W.C., price 4s. 6d. each set. Full directions for use will be sent out with each set of apparatus and with all standard cultures. And under service conditions the standard agglutinable cultures will be supplied in quantities sufficient for all ordinary routine work. When application is made for them the probable weekly number of agglutination tests to be made should be stated.

The standard agglutinating sera for *B. dysenteriae* (Shiga, Flexner, and Y.) and *B. enteritidis* (Gaertner) will be provided either for the identification of these several forms or for the use in the standardisation of killed agglutinable cultures.

The use of the standard agglutinable cultures, with the set of apparatus as provided, is believed to offer the following advantages:—1. The procedure is simple and rapid. 2. The materials are always ready, and no cultures have to be incubated and prepared. 3. The culture is killed and all risk of infection is absent. 4. The reaction can be carried out at any temperature between 35°C. and 56°C., or even at room temperature if necessary. 5. No microscope is needed. 6. Owing to the precise quantitative determination which it allows, the method enables the worker to follow the course of the agglutination curves obtained by successive examinations, and thus facilitates the diagnosis of active disease. 7. The results obtained possess standard uniformity even in relatively unpractised hands, and are strictly comparable from case to case and from day to day, wherever the tests are

performed. The expression of the results in standard agglutinin units allows the comparison of extensive series of observations in different laboratories and at various times for statistical or other purposes.

The Medical Research Committee point out that the standardised cultures and sera already provided for *B. typhosus*, *B. paratyphosus* A, and *B. paratyphosus* B have been in use at the chief military laboratories engaged in work upon enteric fever cases and carriers with the Expeditionary Force and at home for over a year. It is hoped that in the interests of uniformity of results and the unification of records the new standards now made easily available may be generally adopted.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Royal Academy of Medicine in Ireland.

THE annual meeting of the Royal Academy of Medicine was held on Oct. 13th. The General Council reported that the number of Fellows was 144, of members 17, and of student associates 8, compared with 149 Fellows, 16 members, and 5 student associates in the previous session. Several meetings had been abandoned at the end of last session owing to the rebellion and the subsequent state of martial law. The annual elections resulted in the election or re-election of the following officers: President: Dr. R. D. Purefoy; general secretary: Dr. J. A. Scott; secretary for foreign correspondence: Sir John W. Moore; and of the following as presidents of sections: Medicine, Dr. H. O. Drury; Surgery, Mr. W. Taylor; Obstetrics, Dr. G. FitzGibbon; Pathology, Dr. E. J. McWeeney; Anatomy and Physiology, Professor E. J. Evatt; State Medicine, Dr. W. A. Winter.

Scene at an Asylum.

At the last meeting of the committee of management of the Ballinasloe District Asylum Mr. John Mills, who had been assistant medical officer for 23 years, was elected resident medical superintendent. An extraordinary scene ensued. The news quickly reached the inmates of the institution and loud cheers could be heard from all parts of the building. Several of the patients came from the dining-hall and demanded the doctor's presence. On emerging from the board room he was seized by the patients, who put him on their shoulders, and amidst great cheering he was carried through the corridors.

Proposed Midwifery Legislation for Ireland.

The Local Government Board for Ireland is engaged in drafting a Midwives Bill for Ireland on similar lines to those of the Scottish Bill, and has recently had a conference with a medical committee appointed on the initiative of the Irish Medical Association. It is understood that the two bodies are in substantial agreement. The Local Government Board accepted a suggestion of the committee that the period of practice entitling an existing midwife to register should be three years instead of one year as in the Scottish Act. The Board has promised to consult the committee again before the draft Bill leaves its hands.

Royal Humane Society: Awards to Irish Medical Men.

The last list of awards made by the committee of the Royal Humane Society for gallant actions in saving, or attempting to save, life contains the names of two Irish medical men. Mr. Cornelius Hickey, of Kilkee, is awarded a bronze medal for saving a man and woman from drowning at Kilkee. The woman first got into difficulty, and the man, going to her help, was also in danger. Mr. Hickey, though fully clothed, swam to their assistance, and rescued both. Mr. James Roberts, of Limerick, was awarded a testimonial for his courageous rescue of a man from a rough sea at Kilkee.

A New Type of Epidemic in Belfast.

During the past month many varieties of a disease presenting some unique clinical features have been met with in Belfast. Some of the cases are ushered in with high temperature and diarrhoea, others have no temperature and very slight relaxation of the bowels, but all have certain features in common—loss of appetite, general malaise, and abdominal pain. The last symptom is the most characteristic; it occurs mainly over the lower abdomen and is attended with

tenderness on pressure, sometimes markedly on the right side, and the first idea that is suggested to the medical attendant is that an attack of appendicitis is threatening. The pain, however, soon moves to other parts of the abdomen, especially along the course of the large bowel, and the subsequent history of the patients seems to indicate that the colon has been the seat of some bacillary affection. In other cases during the convalescence pains of a "myalgic" nature occur in the back and in the limbs. Some medical men who have been at the front think the cases bear a certain resemblance to a type of the "trench fever," some of which, it appears, have at first been mistaken for appendicitis. Fortunately, in Belfast the great majority of those attacked, whether the onset is sudden and severe or more gradual and mild, soon recover. It has been common in former years to have cases of ordinary autumnal diarrhoea at this season, but the present epidemic is of an entirely different nature, its most characteristic feature being the abdominal pain and acute tenderness on pressure.

Doctors and the Military Age.

On Oct. 14th Mr. J. J. Todd, medical officer of Omagh Dispensary District, asked for temporary leave of absence and tabled a certificate from a famous cardiac specialist to the effect that the state of his heart made it necessary that he should have a period of rest. The Board, after a discussion, granted sick leave to Mr. Todd, and appointed Dr. D. F. Murnaghan as temporary substitute, but he is of military age and so ineligible.

Oct. 17th.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

Temporary Surgeons: T. W. Robbins and J. A. M. Alcock.

ARMY MEDICAL SERVICE.

Temporary Colonel Henry A. Thomson, C.M.G. (Captain, R.A.M.C., T.F.), relinquishes his temporary commission.

ROYAL ARMY MEDICAL CORPS.

Major A. E. Snell, C.A.M.C., to be Assistant Director of Medical Services, and to be temporary Colonel whilst so employed.

Major E. E. E. Powell, from Supernumerary List, to be Lieutenant-Colonel, vice Lieutenant-Colonel J. S. Green, placed on retired pay.

Major (temporary Lieutenant-Colonel) F. S. Irvine, D.S.O., to be Lieutenant-Colonel.

The undermentioned are granted temporary rank whilst employed at the Manor (County of London) War Hospital:—As Lieutenant-Colonel: W. I. Donaldson. As Major: S. C. Elgee.

Temporary Captain F. G. W. Deane to be temporary Major whilst in charge of the Springburn and Woodside War Hospital.

To be temporary Captains: S. K. Adams, T. Redmayne, H. Fraser, Lieut. W. A. Costane, C.A.M.C., and Hon. Major N. C. Wallace, C.A.M.C.

Temporary Captains relinquishing their commissions: H. J. Hutchens, A. G. Mossop, G. M. W. Hodges, A. D. Haydon, A. M. Fisher (on account of ill-health), T. G. Moorhead, W. Templeman (on account of ill-health), and P. Northcote.

Temporary Lieutenants to be temporary Captains: J. Pirie, F. McE. Sinclair, W. J. Hicks, J. W. Riddoch, A. L. Badcock, D. A. Evans, J. C. Hindley, J. S. Gilchrist, J. D. Watson, J. M. Macfie, W. G. D. McCall, J. V. Grant, W. Cunningham, J. A. Leiper, P. C. Davie, J. C. Knox, F. G. Cross, T. H. Sarsfield, N. B. Loughton, F. R. Sturridge, J. P. Lusk, H. R. W. Husbands, J. T. MacKenzie, T. J. Gilmore, M. S. Bryce, J. Campbell, C. C. B. Gilmour, D. M. R. Crighton, R. F. Linton, A. L. Anderson, F. J. Hathaway, G. B. McTavish, G. Walker, A. W. P. Todd, A. H. Coleman, T. Pretsell, J. Beatty, G. F. Gill, T. J. Buckley, J. C. Boyd, J. McKie, E. J. Storer, L. C. Martin, M. Sommerville, J. S. Findlay, P. C. Litchfield, J. Watson, R. A. Fuller, J. Philp, E. G. B. Calvert, P. Sturrock, J. E. Taylor, J. B. Thackeray, A. G. Winter, H. H. Mathias, L. M. Ingle, J. A. Liley, J. L. Graham-Jones, H. P. Newsholme, J. K. Morton, V. G. Williams, G. Marshall, R. L. Norman, F. L. Pelly, H. J. Bell, T. F. Shackleton, C. G. A. Chislett, G. F. Oldershaw, W. Shanks, G. O. Connell, F. W. Joynes, F. J. Kirkness, A. G. Mowat, A. A. Miller, H. P. Crampton, R. W. Shegog, J. F. Hoare, A. C. T. Woodward, J. L.

Hendry, G. W. Charsley, W. Fairclough, W. B. Thompson, T. B. Riddall, J. R. Dobbin, J. MacKinnon, C. C. Irvine, L. M. Rowlette, D.S.O., C. S. Van R. Harwood, J. D. O'Connor, A. G. Naismith, E. G. Fenton, R. L. Ley, O. A. J. N. Muriset, T. Kelly, S. Bryson, H. J. Flanagan, W. W. Uttley, G. H. Powell, M. Davidson, J. F. Bullar, G. M. Grant, C. S. Pantin, W. H. Best, J. M. Anderson, W. Warburton, A. Stodart-Walker, C. M. Stubbs, G. F. Fawn, R. Park, W. N. Gilmour, A. E. Hockett, F. G. Martin, W. Core, J. H. C. Gatchell, E. T. Jones, F. B. Manser, J. E. McCartney, W. E. A. Buchanan, R. P. Kennedy, R. J. Aherne, R. N. Farrer, W. Herbertson, E. W. Craig, A. H. Murch, E. C. Mackay, A. S. Hendrie, A. G. Hamilton, P. Gettleson, J. Joule, R. J. Cane, W. Stanwell, D. J. McAfee, G. Coates, E. G. Evans, F. R. Snell, R. Felton, E. Brown, V. M. Fisher, W. Millerick, D. F. Macdonald, R. A. Fawcus, S. R. Lane, G. L. Parsons, F. Dillon, O. A. Beaumont, W. A. Clayton, A. Macintyre, W. G. Macdonald, G. W. Riddell, F. N. Brown, N. F. Lock, H. Young, L. R. Thomson, B. A. Cheadle, C. E. Meryon, G. G. Bruce, J. G. Castellain, A. C. West, J. G. S. Mennie, M. B. Lindsey, F. C. Plummer, A. B. MacLean, B. C. Scott, R. B. John, D. Dunlop, E. V. Frederick, W. J. M. Marcy, J. W. Littlejohn, W. R. W. Asplen, A. Brown, D. Fisher, W. T. Finlayson (from Unattached List), R. C. MacQueen, A. H. Style, and M. G. Dobblyn.

Temporary Hon. Lieut. W. E. Coe to be Temp. Hon. Captain while employed with the St. John Ambulance Brigade Hospital.

Temporary Lieutenants relinquishing their commissions: J. Macnamara, A. S. Robinson, M. M. Adams, J. L. Wilson, A. Todrick, J. S. Doyle, W. A. Costain, E. R. Holborow, A. W. Cassie, J. Bain, H. G. Ward, H. A. Bodkin, R. V. Howell, H. J. Foote, J. Wyper, N. Bradley, C. D. Halcomb, R. E. B. Yelf, A. Gardner, F. MacRae, R. Fox, J. MacM. Watson, R. A. Wilson, H. I. G. Rutherford, E. Doherty, G. E. Lloyd, M. E. H. Wale, N. Leonard, J. B. J. L. Dalby, J. H. Potter, W. A. Stuart, A. R. Munroe, R. O. Whyte, J. A. Proudfoot, C. A. Everest, J. O. Baker, A. C. Johnston (on account of ill-health), W. P. Taylor, and W. A. Twigg.

To be temporary Lieutenants: Lieut. S. G. Kean, C.A.M.C., D. E. Scott, C. M. Keillor, T. E. R. Branch, R. W. S. Christmas, G. L. Crimp, W. J. H. Hepworth, F. H. Wolfe, J. Longworth, R. S. Kennedy, J. C. Nixon, J. F. Elliott, R. W. S. Walker, J. L. Gregory, Temp. Hon. Lieut. W. Farquharson, Temp. Hon. Lieut. A. R. Fuller, L. H. Taylor, P. C. E. d'Erf Wheeler, J. W. Turner, W. Arnott, J. F. Carroll, A. C. B. Biggs, F. Rogerson, F. W. Waterworth, A. L. Home, G. Fleming, F. W. M. Palmer, Lieut. W. S. Wallace, C.A.M.C., Lieut. R. H. Thomas, C.A.M.C., Lieut. G. H. Ensing, C.A.M.C., C. H. L. Rixon, J. G. Fraser, L. Bathurst, E. A. W. English, C. Murphy, J. McC. Gibson, A. Binning, A. T. Cooper, A. I. Miller, E. G. D. Menzies, J. Robertson, R. Edwards, G. J. Meldon, F. S. Poole, J. J. Hart, G. H. Randolph, E. H. Drake, P. C. C. Smith, W. S. Darby, C. E. A. Wilson, R. J. B. Leney, A. B. Rendel, A. Reid, C. W. Emlin, A. Boothroyd, C. A. Birts, R. J. Harley-Mason, J. B. Cook, H. H. Weir, W. C. Sharpe, A. J. Kearney, J. R. Thompson, T. W. Pattinson, W. Lessey, H. Blyth, J. B. Wall, Lieut. B. O. Kinney, C.A.M.C., Lieut. G. L. Gall, C.A.M.C., Lieut. C. M. Anderson, C.A.M.C., Lieut. F. G. Pedley, C.A.M.C., Lieut. W. C. Brown, C.A.M.C., Lieut. M. A. Harrington, C.A.M.C., Lieut. J. W. MacKie, C.A.M.C., Lieut. F. J. Colling, C.A.M.C., R. B. Martin, A. J. McNair, A. B. Lindsay, B. B. Sapwell, jun., W. E. Glover, K. W. D. MacRae, H. T. Evans, W. Brennan, W. W. Dempster, G. Saporiti, J. Leach, Temp. Hon. Lieut. R. Curle, J. Robertson, W. H. Whitehouse, C. E. O'Keffe, J. C. Murray, and E. A. C. Beard.

J. McMurray to be temporary Lieutenant whilst employed with the Cape Labour Corps.

SPECIAL RESERVE OF OFFICERS.

Supplementary to Regular Units or Corps: Major J. H. P. Graham to be temporary Lieutenant-Colonel whilst in command of a General Hospital.

Captains to be Temporary Majors whilst in command of Field Ambulances: W. Darling, J. Adams, K. D. Murchison, D. C. Barron, M. R. Taylor, and M. W. Paterson.

Captains (Temporary Majors) relinquish their temporary rank on re-posting: W. Darling and M. W. Paterson.

Lieutenants to be Captains: K. P. Brown, H. D. Wright, W. H. Ferguson, J. A. Crawford, and G. Morris.

Lieutenant on probation C. A. W. Ramsay is confirmed in his rank.

To be Lieutenants: D. R. Hennessy, S. J. V. Furlong, J. Y. Maclean, D. Roger, M. McGillivray (from St. Andrews University Contingent Officers Training Corps), T. D. Renwick, and L. P. Johns (from University of London Officers Training Corps).

TERRITORIAL FORCE.

Highland Field Ambulances: Lieutenants seconded for duty with a Stationary Hospital: B. L. Davis and A. G.

Reid. Officers seconded for duty with a Stationary Hospital: Major (temporary Lieutenant-Colonel) A. E. Kidd, Captain A. B. Jamieson, Captain G. McConnell, Captain A. R. Moodie, Captain C. G. Skinner, and Lieutenant J. Steele.

Wessex Field Ambulance: Captain W. A. Valentine is seconded for duty with a Stationary Hospital.

London General Hospital: Captain P. H. Mitchiner is seconded for duty with a Stationary Hospital.

Wessex Casualty Clearing Station: Officers seconded for duty with a Stationary Hospital: Captain (temporary Major) A. C. Alport, Captain J. Fenton, Captain C. A. Raison, and Lieutenant A. C. Smith.

Welsh Border Mounted Brigade Field Ambulance: Lieutenant J. Derham-Reid to be Captain.

Northumbrian Field Ambulance: H. Evers to be Lieutenant.

London Sanitary Company: To be Captains: Lieutenant J. A. Andrews and Lieutenant A. E. Jury.

Attached to Units other than Medical Units.—R. Elliot Pitts to be Lieutenant.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census 7144 births and 4161 deaths were registered during the week ended Saturday, Oct. 7th. The annual rate of mortality in these towns, which had steadily increased from 10.5 to 13.5 per 1000 in the seven preceding weeks, fell in the week under notice to 12.5 per 1000 of their aggregate civil population, estimated at 17,312,295 persons for the year 1915. During the 13 weeks of last quarter the mean annual death-rate averaged 11.4, against 11.1 per 1000 in London. Among the several towns the death-rate during the week ranged from 5.4 in Gloucester, 6.2 in Barnsley, 6.6 in Bath, 6.9 in Barrow-in-Furness, and 7.0 in Ipswich, to 17.2 in Wakefield, 17.5 in West Bromwich and in Liverpool, 18.6 in Rotherham, 18.8 in Carlisle, and 19.7 in Tynemouth.

The 4161 deaths from all causes were 319 fewer than the number in the previous week, and included 412 which were referred to the principal epidemic diseases, against numbers declining from 594 to 488 in the three preceding weeks. Of these 412 deaths, 294 resulted from infantile diarrhoeal diseases, 52 from diphtheria, 25 from measles, 15 from whooping-cough, and 13 each from enteric fever and scarlet fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1.2, against 1.5 per 1000 in the previous week. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had been 477, 448, and 384 in the three preceding weeks, further fell to 294, and included 62 in London, 34 in Liverpool, 16 in Birmingham, 12 each in West Ham and Sheffield, and 10 each in Hull and Manchester. The deaths attributed to diphtheria, which had been 35, 39, and 40 in the three preceding weeks, further rose to 52, of which 12 occurred in London, 6 in Liverpool, and 3 each in West Ham and Sheffield. The fatal cases of measles, which had been 29, 21, and 23 in the three preceding weeks, rose to 25, and included 10 in London, 4 in West Ham, and 3 in Sheffield. The deaths attributed to whooping-cough, which had been 33, 28, and 20 in the three preceding weeks, further fell to 15, of which 3 were registered in Manchester and 2 in London. The deaths referred to enteric fever, which had been 9, 4, and 11 in the three preceding weeks, rose to 13, and included 3 in London. The fatal cases of scarlet fever, which had been 11, 8, and 10 in the three preceding weeks, rose to 13, of which 3 occurred in London and 2 in Plymouth.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 980, 1012, and 1020 at the end of the three preceding weeks, further rose to 1037 on Saturday, Oct. 7th; 159 new cases were admitted during the week, against 130, 158, and 151 in the three preceding weeks. These hospitals also contained on Saturday, Oct. 7th, 1357 cases of diphtheria, 73 of measles, 50 of whooping-cough, and 38 of enteric fever, but not one of small-pox. The 988 deaths from all causes in London were 127 below the number in the previous week, and corresponded to an annual death-rate of 12.0 per 1000. The deaths referred to diseases of the respiratory system, which had increased from 66 to 130 in the five preceding weeks, further rose to 136 in the week under notice.

Of the 4161 deaths from all causes in the 96 towns, 148 resulted from different forms of violence, 309 were the subject of coroners' inquests, and 1241 occurred in public institutions. The causes of 42, or 1.0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Sheffield, Leeds, Bristol, West

Ham, Nottingham, Leicester, and in 67 other smaller towns. Of the 42 uncertified causes, 7 were registered in Birmingham, 5 in Liverpool, 4 in London, 3 in Manchester, and 2 each in Bootle, Blackburn, Rotherham, and Gateshead.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census 7826 births and 4071 deaths were registered during the week ended Saturday, Oct. 14th. The annual rate of mortality in these towns, which had been 12.8, 13.5, and 12.5 per 1000 in the three preceding weeks, further fell in the week under notice to 12.3 per 1000 of their aggregate civil population. Among the several towns the death-rate ranged from 4.3 in Oxford, 4.4 in Eastbourne, 6.5 in Newport (Mon.), 6.8 in Enfield, and 6.9 in Edmonton, to 17.3 in Gloucester, 18.7 in Middlesbrough, 19.6 in Rochdale, 20.7 in Barnsley, and 21.8 in Bootle.

The 4071 deaths from all causes were 90 fewer than the number in the previous week, and included 367 which were referred to the principal epidemic diseases, against numbers declining from 594 to 412 in the four preceding weeks. Of these 367 deaths, 259 resulted from infantile diarrhoeal diseases, 45 from diphtheria, 23 from whooping-cough, 21 from measles, 10 from enteric fever, and 9 from scarlet fever, but not one from small-pox. The death-rate from these diseases was equal to 1.1, or 0.1 per 1000 less than that recorded in the previous week. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had declined from 477 to 294 in the four preceding weeks, further fell to 259, and included 72 in London, 24 in Liverpool, 12 in Sheffield, 11 in Birmingham, and 7 in Bristol. The deaths attributed to diphtheria, which had increased from 35 to 52 in the four preceding weeks, fell to 45, of which 9 were registered in London, 4 in Birmingham, and 3 each in Liverpool and Carlisle. The fatal cases of whooping-cough, which had been 28, 20, and 15 in the three preceding weeks, rose to 23, and included 4 in Great Yarmouth and 3 each in Bootle and Manchester. The deaths referred to measles, which had been 21, 23, and 25 in the three preceding weeks, fell to 21; 6 deaths occurred in London, 3 in West Ham, and 2 each in Wolverhampton, Birmingham, and Manchester. The deaths attributed to enteric fever, which had been 4, 11, and 13 in the three preceding weeks, fell to 10, and included 4 in London and 2 in Manchester. The fatal cases of scarlet fever, which had been 8, 10, and 13 in the three preceding weeks, fell to 9, of which 3 occurred in London.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had increased from 980 to 1037 in the four preceding weeks, further rose to 1074 on Saturday last; 167 new cases were admitted during the week, against 158, 151, and 159 in the three preceding weeks. The cases of diphtheria, which had been 1292, 1294, and 1357 at the end of the three preceding weeks, further rose to 1410; 194 new cases were admitted during the week, against 186, 193, and 228 in the three preceding weeks. These hospitals also contained on Saturday last 70 cases of measles, 47 of whooping-cough, and 43 of enteric fever, but not one of small-pox. The 966 deaths from all causes in London were 22 below the number in the previous week, and corresponded to an annual rate of 11.7 per 1000. The deaths referred to diseases of the respiratory system, which had increased from 66 to 136 in the six preceding weeks, fell to 132 in the week under notice.

Of the 4071 deaths from all causes in the 96 towns, 187 resulted from violence, 342 were the subject of coroners' inquests, and 1239 occurred in public institutions. The causes of 46, or 1.1 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Sheffield, Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, and in 70 other smaller towns. Of the 46 uncertified causes, 11 were registered in Liverpool, 9 in Birmingham, 4 in Gateshead, and 2 each in Leicester, Manchester, Hull, Sunderland, and South Shields.

HEALTH OF SCOTCH TOWNS.

IN the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year 1035 births and 685 deaths were registered during the week ended Saturday, Oct. 7th. The annual rate of mortality in these towns, which had been 13.0, 14.5, and 13.6 per 1000 in the three preceding weeks, rose to 15.1 per 1000 in the week under notice. During the 13 weeks of last quarter the mean annual death-rate in these towns averaged 12.6, against a corresponding rate of 11.4 per 1000 in the large English towns. Among the several towns the death-rate in the week under notice ranged from 6.7 in Hamilton, 7.8 in Ayr, and 10.2 in Leith and in Kirkcaldy, to 17.7 in Aberdeen, 18.8 in Greenock, and 21.0 in Kilmarnock.

The 685 deaths from all causes were 67 in excess of the number in the previous week, and included 92 which were referred to the principal epidemic diseases, against 104 and 75 in the two preceding weeks. Of these 92 deaths, 66

resulted from infantile diarrhoeal diseases, 8 from measles, 7 from scarlet fever, 5 from diphtheria, 4 from whooping-cough, and 2 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 2.0, against 1.2 per 1000 in the large English towns. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had been 50, 83, and 50 in the three preceding weeks, rose to 66, and included 44 in Glasgow, 5 each in Dundee and Paisley, 4 in Aberdeen, and 3 in Edinburgh. The deaths attributed to measles, which had been 4, 4, and 5 in the three preceding weeks, rose to 8, and comprised 3 in Glasgow, 2 each in Edinburgh and Dundee, and 1 in Leith. The fatal cases of scarlet fever, which had been 3, 3, and 6 in the three preceding weeks, numbered 7, and included 2 each in Glasgow, Edinburgh, and Paisley, and 1 in Kilmarnock. The deaths referred to diphtheria, which had been 6, 5, and 9 in the three preceding weeks, fell to 5, and were all registered in Glasgow. The 4 deaths from whooping-cough were slightly below the weekly average of last quarter, and included 2 in Glasgow. The fatal cases of enteric fever were recorded in Glasgow and Edinburgh.

The deaths referred to diseases of the respiratory system, which had increased from 45 to 72 in the four preceding weeks, further rose to 94 in the week under notice, but were 22 below the number registered in the corresponding week of last year. The deaths from violence numbered 36, against 41 and 25 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the registration area of Dublin 204 births and 142 deaths were registered during the week ended Saturday, Oct. 7th. The annual rate of mortality, which had been 17.3, 15.6, and 18.3 per 1000 in the three preceding weeks, rose to 18.7 in the week under notice, against 12.0 and 15.7 per 1000 in London and Glasgow respectively.

The 142 deaths from all causes included 35 of infants under 1 year and 33 of persons aged 65 years and upwards. Fourteen deaths (of infants under 2 years) were referred to diarrhoeal diseases, and 3 each to enteric fever, whooping-cough, and diphtheria. The causes of 3 deaths were the subject of coroners' inquests, and those of 3 others were uncertified, while 50, or 35 per cent., of the total deaths occurred in public institutions.

During the same period 153 births and 105 deaths were registered in the city of Belfast. The deaths corresponded to an annual rate of 14.0, or 0.6 per 1000 higher than that in the previous week, and included 19 of infants under 1 year and 20 of persons aged 65 years and upwards. Two deaths (of infants under 2 years) were referred to diarrhoeal diseases and 1 each to enteric fever and measles. The causes of 4 deaths were the subject of coroners' inquests, and 26 of the total deaths occurred in public institutions.

Obituary.

W. A. MEREDITH, M.B., C.M. EDIN., F.R.C.S. ENG.,
CONSULTING SURGEON TO THE SAMARITAN FREE HOSPITAL FOR WOMEN.

Mr. William Appleton Meredith, whose death we briefly recorded last week, was born in New York in 1848. He was brought up at Boulogne, and thus acquired a thorough knowledge of the French language. His medical education began and ended at University College Hospital, where he held the posts of house surgeon to Sir John Erichsen and resident medical officer. But there was an interval during which he went to Edinburgh in order to obtain a medical degree. There he saw much of Lister's practice and made the acquaintance of Knowsley Thornton. Soon afterwards, at Lister's suggestion, Thornton came to London to assist Sir Spencer Wells in his enormous private practice, then by far the largest in London; and when, after some years, Thornton left Spencer Wells, Meredith took his place. Before this his knowledge of French had stood him in good stead whilst acting as the medical attendant to the well-known Belgian Minister, Baron Van der Weyer, in which capacity he formed a large social acquaintance. In the course of time Thornton became the most prominent London ovariologist, and Meredith, when the arrangement with Spencer Wells came to an end, worked with Thornton for some years.

Thornton's early retirement left the field open, and Meredith, who had profited by the great experience of Spencer Wells and Thornton and was thoroughly versed in Lister's antiseptic methods, was not slow to grasp the opportunity offered. He was already known as an extremely

careful though rather slow operator, who devoted the most meticulous attention to every detail of treatment. Successful ovariologists were few and far between. He therefore soon acquired a large and lucrative practice, and, as he was surgeon to the Samaritan Hospital, he had opportunities of showing in public that he belonged to the camp of antiseptic ovariologists, who at that time were in constant conflict with those who decried Lister's methods. But he did not add much to the literature of the subject.

In the meantime, Mr. and Mrs. Meredith had developed an interest in many things outside the medical profession. Their house in London became filled with a well-selected collection of rare old furniture and plate, and their holidays were spent at a country house in Hertfordshire. It was no surprise to Meredith's friends when they heard that he, before most men think of retiring, was about to give up London and make his home in Norfolk, where, ever since, he spent his time in country pursuits.

Meredith was not a breaker of new ground like Spencer Wells and Thornton; but he was an extremely successful surgeon. He was a rigid follower of Lister's methods, and did not hesitate to employ antiseptics in the course of operations on the peritoneal cavity.

JAMES BERESFORD RYLEY, M.D. BRUX.,
M.R.C.S. ENG., L.R.C.P. EDIN.

Dr. James Beresford Ryley, whose death occurred at his bungalow residence at Shoreham-by-Sea on Oct. 13th, had resided at Shoreham about six years, making periodical journeys to London in pursuance of professional duties. At Shoreham he was a well-known figure owing to his active participation in local affairs, and the news of his rather sudden end came as a surprise to many friends and patients. Born in India 77 years ago, he was a son of Major Beresford Ryley, of the Bengal Artillery. He came to this country at an early age and was educated in Ireland. Taking medicine as his profession, he studied at the Royal College of Surgeons in Ireland and the University of Edinburgh. He took the L.S.A. diploma in 1864, became M.R.C.S. Eng. in 1866, L.R.C.P. Edin. in 1868, proceeding to the M.D. degree in Brussels in 1879. He was for a time president of the Brussels Medical Graduates' Association. One of his earliest appointments was as a surgeon on H.M.S. *Warspite*, and, settling down in London, he held a large number of appointments. He made several contributions to THE LANCET.

EMILE LAGRANGE, M.D. LOUVAIN.

Dr. Emile Lagrange, the well-known Ypres physician, died at Leeds, where, as a refugee, he has been since the beginning of the war the honoured guest of the St. Chad's Belgian Refugees' Committee. Descended from an old Flemish family, he was born at Ypres in 1824, and after taking his degree at the University of Louvain he entered upon practice in his native city and for 50 years was attached to the hospital there. For his services to the State on the occasion of an outbreak of cholera he received the decoration of the Croix Civique and later that of the Order of Leopold. Dr. Lagrange, whose faculties remained active till the day of his death, had watched the development of modern Belgium with the anxiety of a true patriot, and it is pathetic that his death should have occurred in a foreign, albeit friendly, country at a time when his own country is passing through her hour of trial. His recollections included the signing of the treaty of 1839 (the famous "scrap of paper") and the visit of Queen Victoria with the Prince Consort to her uncle Leopold I. in Belgium.

DEATH OF MR. CHAUNCEY PUZEY, F.R.C.S.—Mr. Chauncey Puzey, consulting surgeon to the David Lewis Northern Hospital, and one of the best-known surgeons in Liverpool, died at his residence, Princes-avenue, West Kirby, on Oct. 10th. Receiving his medical education at Guy's Hospital, London, he obtained the M.R.C.S. Eng. in 1863 and the L.R.C.P. Lond. in the following year. He was elected a Fellow of the Royal College of Surgeons of England in 1894. For many years he was senior surgeon at the David Lewis Northern Hospital (of which he subsequently became consulting surgeon), an honorary surgeon to the Liverpool Royal Infirmary Lock Hospital, and assistant surgeon at the Liverpool Eye and Ear Infirmary. He was an ex-President of the Liverpool Medical Institution.

Correspondence.

"Audi alteram partem."

SPINAL ANÆSTHESIA AND THE ACUTE ABDOMEN.

To the Editor of THE LANCET.

SIR,—May I endorse the plea for spinal stavaine as the anæsthetic of choice in most acute abdominal operations made by Mr. Percival Cole in your issue of Oct. 7th? It is a great gain for the surgeon to have a completely flaccid abdominal wall and quiet thoracic respiration, when the patient's life may depend on delicacy of technique and freedom of access to all parts of the peritoneal cavity. It is a gain, too, to have little or no post-operative vomiting and to be able to give fluids by the mouth from the time of operation. The cutting off of all afferent stimuli during operation prevents any nerve shock, and it is a far more effective way of realising Crile's ideal of "anoci-association" than is the infiltration method used by Crile himself. But, above all, the method is indicated because of the reduced tendency to post-operative intestinal paralysis.

In a paper read before the Manchester Medical Society on Nov. 5th, 1913 (and published in the *Medical Chronicle*, January, 1914) I drew attention to the fact that under spinal anæsthesia in cases of general suppurative peritonitis the small intestine may be seen at operation in active peristalsis, and the bowels often act on the table, owing to the abolition of the inhibitory reflex through the splanchnic nerves, which arise from the sixth dorsal to first lumbar spinal segments. I urged the superiority of this method to general anæsthesia, in which the splanchnic inhibitory reflex remains active and all the traumatic stimuli of the operation add their paralysing influence to that of the peritonitis. My subsequent experience of acute abdominal work has fully borne out this contention, and I am convinced that in many grave abdominal emergencies spinal as against general anæsthesia is a life-saving procedure.

There are, I believe, two stages in the intestinal paralysis of acute peritonitis. The first is the splanchnic reflex inhibition of movement, which is, surgery apart, a protective mechanism and Nature's prophylactic against diffuse infection. The second and terminal stage is a direct poisoning of the neuro-muscular tissues of the bowel wall. When this latter stage is fully developed recovery is hopeless. In this condition the bowel when exposed under spinal anæsthesia lies motionless, in contrast to its active writhing movements when seen in the earlier stage, and I believe that a fairly accurate idea of the post-operative prognosis can be founded on these facts.

In technique I differ somewhat from Mr. Cole. I have not seen any sufficient reason to give up Barker's heavy solution, which I find both rapid and constant in action, and readily controlled in its extent. I do not now often fail to procure anæsthesia up to the costal margin when required, and I have frequently used the method in perforated gastric or duodenal ulcer or operations on the gall-bladder without trouble. Provided that the neck is flexed to protect the phrenic nerves, the legs can from the first be raised higher than the trunk and after 15 minutes the Trendelenburg position can safely be used.

Mr. Cole's method of blindfolding seems to me likely to increase the fears of a nervous patient. I rely on the preliminary dose of morphia and a screen across the patient's chest shutting off the operation, and if the patient is inclined to be nervous a little ether inhaled occasionally keeps him in a drowsy condition, short of the stage of excitement, and has the additional advantage of stimulating the heart and respiration. I always inject eucaine or novocaine intradermically at the site of puncture with a fine hypodermic needle before inserting the spinal needle, and I make the injection myself, while the anæsthetist regulates the level of the patient and decides whether or not to give a little ether.

The technique of spinal anæsthesia is certainly difficult to acquire, but the method becomes far easier and more reliable with experience and will, I believe, ultimately win much wider favour than it at present enjoys.

I am, Sir, yours faithfully,

Manchester, Oct. 9th, 1916.

JOHN MORLEY.

THE PREPARATION OF STABLE COLLOIDAL ANTIMONY.

To the Editor of THE LANCET.

SIR,—The use of colloidal metals in the treatment of bacterial diseases is getting more and more extensive and has given rise to many brilliant results. The remarkable trypanocidal properties possessed by antimony, its specific action against the Leishmania, and the fact that in the colloids generally the ratio dosis curativa : dosis tolerata is very low, make it desirable to prepare a stable solution of colloidal antimony. The Svedberg Company has obtained the isobutyl-alk-sol of colloidal antimony by a method similar to that of preparing colloidal arsenic. The Svedberg's colloidal antimony is brownish-red by transmitted light and black by reflected light.¹

There is mention made of the preparation of this drug in the *Chemist and Druggist* (vol. i., 1913), but so far as I am aware, none of the big manufacturing chemists in England are able to supply it. The reference in the *Chemist and Druggist* is probably to some colloidal compounds of antimony which have been prepared. Experiments conducted by Martindale on the chemical production of colloidal antimony have been unsuccessful.² The Svedberg's colloidal antimony was very unstable and was precipitated within a short time after its production, and must therefore be more or less useless for therapeutic purposes on a practical scale.

Our first experiments were performed with ethyl alcohol. It was found that no colloidal solution of the metal could be obtained by passing sparks from an induction coil through coarse metallic antimony under ethyl alcohol. The method of passing a feeble current through this medium was tried but without success. The most successful medium was found to be chloroform, from which the colloid is obtained in fair concentration and from which solid colloidal antimony can be secured by evaporating the medium.

The details of the preparation are as follows. The apparatus consists of a fair-sized induction coil worked by an 8-volt accumulator. The electrodes, made of aluminium foil, are dipped in chloroform, into which are added coarse particles of metallic antimony freed from dust of antimony by sifting. On passing sparks through this medium some of the antimony passes into a powdery state and some goes into solution. On distilling off the solvent we obtain a tar-like substance, having a peculiar smell. The substance can be dried in a desiccator or in air and even heated gently over the Bunsen burner, but apparently does not undergo much change, as it is freely soluble in chloroform after such treatment.

The colloidal solution of antimony is brownish-red by transmitted light and black by reflected light, being in this respect similar to the Svedberg's colloid. It presents the Tyndall phenomenon. The colloid obtained in this way seems to be a very stable substance, and in this respect differs from the Svedberg's colloid. The therapeutic use of the colloidal metallic antimony has already been described in the *Indian Medical Gazette* (May, 1916). Further observations on the use of this drug in the same disease have shown similar beneficial results.

I am, Sir, yours faithfully,

UPENDRA NATH BRAHMACHARI, M.A., M.D., Ph.D.,

Raj Bahadur; Teacher of Medicine at the Campbell Medical School, Calcutta.

August 18th, 1916.

THE DIAGNOSIS OF TUBERCULOSIS BY TUBERCULIN.

To the Editor of THE LANCET.

SIR,—I venture a criticism on a point of technique raised in Dr. H. A. Ellis's excellent article on diagnosis by tuberculin in your issue of Oct. 7th. If the successive dilutions are made within the syringe the amount contained in the nozzle after the plunger has been brought to the tenth mark as directed by Dr. Ellis is too great to be disregarded. It is doubtless variable with the pattern of syringe used, but I have found it several times to be about one-third of a division. In such case the dilutions prepared according to Dr. Ellis's method, nominally 1 in 10, 1 in 100, 1 in 500, would be actually 1 in 7.5, 1 in 56, 1 in 211.

¹ Ber. 38, 3615-3620, 1906, and Megus' "Inorganic Chemistry."² Extra Pharmacopœia, 1915, sixteenth edition.

I am inclined to doubt the wisdom of trusting to an air-bubble for the thorough mixing of the contents of a long, narrow syringe. In such bubbles move very slowly and grudgingly. Why not pass a teaspoon through the flame of a spirit lamp and discharge and refill the syringe into and from it several times? I am, Sir, yours faithfully,
Coventry, Oct. 16th, 1916. A. F. BILL.

THE AGGLUTINATION OF MENINGOCOCCI IN RELATION TO CURATIVE SERUMS.

To the Editor of THE LANCET.

SIR,—The treatment of epidemic cerebro-spinal meningitis by intrathecal injections of immune serum has given somewhat uncertain results during the past two years in Great Britain. On this account the findings of an investigation into the agglutinative properties of divers serums, despite the fact that these serums were only tested against two strains of meningococci, may be of interest to those concerned with the treatment of this disease.

Since the microscopic test in the case of non-motile organisms allows at least the possibility of leaving something to imagination, I made use of Dreyer's macroscopic method of testing for agglutination. In this method positive reactions are marked by a definite flocculent deposit and by a clearing up of the supernatant fluid. As a control the homologous serum for each strain of meningococci was used. In addition to this a normal serum and also the serum of a man who had recovered from the disease 12 months previously were employed.

From the spinal fluid of two patients, Q. and W., under the care of Deputy Surgeon-General Robert Hill, C.V.O., at the Royal Marine Infirmary, Deal, pure cultures of a Gram-negative diplococcus, growing at 37° C., but not at 22° C., and fermenting glucose-litmus-peptone-ascitic water, but not saccharose litmus-peptone-ascitic water—the diplococcus meningitidis—were isolated. Incidentally these cultures retained their characteristics through many subcultures. In testing the agglutinating properties of the serums on these two strains of meningococci an emulsion of a 16-hours growth was employed. The serums tested were diluted 1 in 10, 1 in 15, 1 in 25, 1 in 50, 1 in 125, and 1 in 250.

Meningococci from the patients Q. and W. were not agglutinated by normal serum, by serum from a patient who had recovered 12 months ago, by the antimeningococcus serum of the Wellcome Physiological Research Laboratories (A. 1289 D.), or by the following antimeningococcus serums from the Pasteur Institute of Paris—(3636) Gordon strain 1, (3639) Gordon strains 2 and 3, and (3635) monovalent, all prepared in February, 1916—in any of the above dilutions.

The meningococci from the patient Q. were not agglutinated by serum from the patient W. in any of the above dilutions. They were agglutinated by their homologous serum from patient Q. and also by the polyvalent serum of the Pasteur Institute (January, 1916) in dilutions of 1 in 10, 1 in 15, and 1 in 25. Lastly, this strain of meningococci was agglutinated by the antimeningitis serum of the Rockefeller Institute, New York (17/11/15) in dilutions from 1 in 10 to 1 in 125.

Meningococci from the patient W. were not agglutinated by serum from the patient Q. or by the polyvalent serum of the Pasteur Institute in any of the foregoing dilutions. They were agglutinated by their own homologous serum from the patient W. in dilutions from 1 in 10, 1 in 15, and 1 in 25, and they were agglutinated by the serum of the Rockefeller Institute in dilutions from 1 in 10 to 1 in 250.

This investigation was repeated on three occasions, and the results remained constant. The value of the serum prepared at the Rockefeller Institute, New York, as judged by the agglutination of these two strains of meningococci, is very apparent, and it may be suggested that early lumbar puncture, followed by intrathecal injection of this serum, should lead to results as brilliant as those originally achieved by Flexner.

Of the two cases to which reference has been made, both fulminant in type at the onset, one (W.) has made a complete recovery. This patient had an intrathecal injection of Flexner's serum (40 c.c.) six hours after the onset of the disease. The other patient (Q.) died after three months' illness. He received an early intrathecal injection of one

of other serums enumerated, but did not have Flexner's serum (40 c.c.) until the eighth day of his illness.

I am, Sir, yours faithfully,
Harley-street, W., Oct. 10th, 1916. HALLIDAY SUTHERLAND.

"CLERGYMEN'S SORE-THROAT."

To the Editor of THE LANCET.

SIR,—It is now over 30 years since I first asked myself why we speak of chronic pharyngitis and laryngitis produced by over-speaking, as "clergymen's sore-throat" and not as barristers' sore-throat. Why is this condition so rarely seen in barristers who use their voices more than clergymen, and in stuffer atmospheres? On thinking over the matter the only difference I could perceive between a clergyman's and a barrister's speaking was that a clergyman spoke *down* to his congregation, and a barrister spoke *up* to the judge, the former thus pressing on his larynx and causing congestion thereof, whereas the barrister had his larynx and throat in a normal position, or rather in a hypernormal position. From that time I have always advised such cases to speak looking *up* to their audience and never *down*. I have used no local applications or treatment except to rectify a condition such as granular pharyngitis, but where necessary have suggested a rest of voice for two or three months.

In all cases this plan has been successful. I will only quote one case, an American lady with complete loss of her speaking voice; she was a public lecturer and had had to relinquish her calling, no treatment having benefited her. After three months' rest of voice she resumed her occupation, now 12 years ago, and has never since had loss of voice. During this period she had made no alteration in her manner of public speaking, except that she has declined to use any buildings which involved speaking *down* to her audience, and has therefore always spoken looking *up* from the well of a theatre.

I was much interested a few years ago to see Professor Keith's statement that the human voice would never have become developed had we not first attained the upright posture, which, it seems to me, bears out the *raison d'être* of the treatment mentioned above.

I am, Sir, yours faithfully,
Weymouth-street, W., Oct. 17th, 1916. GEO. STEELE-PERKINS.

THE ROYAL ARMY MEDICAL CORPS GAZETTES.

To the Editor of THE LANCET.

SIR,—The Royal Society of Medicine has received from time to time a few odd numbers of these Gazettes, probably sent to us by Fellows at the front, and I would like with your kind permission to invite those responsible for the publication of these Gazettes that they would endeavour to send to us complete sets, which would be bound and carefully preserved in our library. I need scarcely enlarge on the interest that will attach to such a collection in the years to come, and as, under the conditions that prevail at the front, it is not likely that many complete sets will be preserved, they are sure to become exceedingly scarce and probably unobtainable after the war.

I should be very grateful to any who, seeing this letter, will help me in trying to preserve a complete set of all the Gazettes in this library.

I am, Sir, yours faithfully,
J. Y. W. MACALISTER.
Royal Society of Medicine, 1, Wimpole-street, W.,
Oct. 14th, 1916.

MEDICAL SOCIETY OF LONDON.—An incident of historical interest is the removal of the fine terra-cotta plaque which was presented by the founder of this society, Dr. John Coakley Lettsom, in 1778, from the original meeting house, No. 3, Bolt-court, Fleet-street, and its installation in the present home in Chandos-street, Cavendish-square. The central figure of the plaque represents the Isis of Sais, the fabled revealer of the mysteries of Nature and the presiding genius of medicine. It is flanked on either side by a sphinx, symbolising mystery, while a serpent, emblematic of eternity, bears the inscription, in Greek, "I am whatever is or has been or will be, and no mortal has hitherto drawn aside my veil."

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Killed.

Capt. A. W. Venables, R.A.M.C., was a student at St. Mary's Hospital, London, and qualified in 1913. He was in practice at Cricklewood before joining the R.A.M.C. He received his captaincy in September last.

Died of Wounds.

Lieut. W. S. Lacey, R.A.M.C., was a student at Guy's Hospital, London, and qualified in 1912, having previously received the L.D.S. R.C.S. Eng. in 1903. He was in practice at Hertford before joining the R.A.M.C.

Died.

Col. B. B. Grayfoot, C.B., I.M.S., received his medical education at Edinburgh University and qualified in 1885. He thereupon joined the Indian Medical Service, and was gazetted captain in 1886 and colonel in 1912. He held the appointment of Assistant Director of Medical Services in India, and was appointed C.B. in January of this year.

Wounded.

Capt. H. B. German, R.A.M.C., attached Leicester Regiment.
Capt. W. L. Hutton, Canadian A.M.C.
Lieut. E. E. T. Nuthall, R.A.M.C.
Capt. L. D. Stott, R.A.M.C.
Lieut. R. N. Craig, R.A.M.C., attached Yorkshire Regiment.
Lieut. H. F. Johns, R.A.M.C., attached Leicester Regiment.
Capt. R. J. Rogers, R.A.M.C., attached Middlesex Regiment.
Lieut. F. A. Anderson, R.A.M.C., attached Royal Irish Rifles.
Capt. F. L. P. G. Bennett, R.A.M.C., attached Shropshire Light Infantry.
Lieut. G. J. McGorty, R.A.M.C., attached Highland Light Infantry.
Capt. J. C. Pyper, R.A.M.C.
Lieut. A. J. R. Taylor, R.A.M.C.

MENTIONED IN DESPATCHES.

In a despatch received from Lieutenant-General Sir Percy Lake, Commander of the Forces in Mesopotamia, and describing the final operations for the relief of Kut-el-Amara, the following reference to the medical staff appears :—

The energy and devotion to duty shown by the personnel of the medical services deserve commendation. Overworked and undermanned as they were during the advance in January—for the greater portion of the medical organisations then in the country had been shut up in Kut, and the medical units of the 3rd and 7th Divisions had only begun to arrive—they did their utmost with the means at their disposal to alleviate the sufferings of the sick and wounded. With the arrival in February of the first river hospital ship, *Sikkim*, and a steady increase in personnel, their power of dealing with the situation was considerably improved, as the action on March 8th showed. No report on the medical services would be complete without reference to the splendid services rendered by Mr. T. A. Chalmers, of Assam, who brought out, and himself drove, his specially designed motor-boat *Arcl*. He spent his whole time, frequently under fire, in conveying sick and wounded between collecting stations, field ambulances, and river hospital craft in a manner which no other boat in our possession could have imitated.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war :—

Trooper G. L. Hardwick, Canadian Cavalry, third son of Dr. F. S. Hardwick, of Charing, Kent.
Lieut. R. Davison, Liverpool Regiment, only son of Dr. J. R. Davison, of Belfast.
Second Lieut. N. de Havilland Hall, Suffolk Regiment, younger son of Dr. de Havilland Hall, of Wimpole-street, W.
Second Lieut. L. H. Spreat, Royal Horse Artillery, younger son of Mr. F. A. Spreat, F.R.C.S., of Whetstone.
Second Lieut. H. P. Dudley, 3rd Leinsters, attached Royal Irish Regiment, third son of the late Dr. H. M. Dudley, of Queen's County, Ireland.
Lieut. H. St. B. Sydenham, Devonshire Regiment, only son of Dr. G. F. Sydenham, of Dulverton, Somerset.
Second Lieut. H. C. Crichton, Manchester Regiment, youngest son of Dr. G. Crichton, of South Kensington.
Second Lieut. A. C. MacCormick, Argyll and Sutherland Highlanders, elder son of Sir A. MacCormick, M.D., of Sydney, Australia.
Capt. N. A. Browning-Paterson, Royal Flying Corps, younger son of Dr. A. Browning-Paterson, of Shepherd's Bush.
Second Lieut. L. C. Kidd, Royal Flying Corps, second son of Dr. H. C. Kidd, of Bromsgrove, Worcestershire.

OBITUARY OF THE WAR.

ARTHUR NIMMO WALKER, B.A., M.D., B.C. CANTAB.,
LIEUTENANT-COLONEL, ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel A. N. Walker, who was killed at the front on Sept. 24th, was second son of the late Dr. George Edward Walker, founder of St. Paul's Eye Hospital, Liverpool. He was educated at Liverpool College and Queens' College, Cambridge, and after qualifying in 1898 was house physician to the Liverpool Royal Infirmary and assistant lecturer on anatomy at the University before he began to devote himself exclusively to ophthalmic surgery, in which his father had been distinguished before him. Besides his surgeoncy at St. Paul's Hospital, he was ophthalmic surgeon to the David Lewis Northern Hospital and to the School for the Indigent Blind, as well as one of two ophthalmic surgeons under the Liverpool Education Committee in connexion with the scheme for the treatment of school children. Dr. Walker made numerous contributions to the literature of his subject, among the most important being the record of a novel and successful experiment in the control of ophthalmia neonatorum, published in our columns in 1908. Dr. Walker served in the South African War, and later, on joining the Territorial Army, was appointed to the command of a battery of West Lancashire Artillery. On the outbreak of war he transferred to the Royal Army Medical Corps and went to France in August, 1915.

Mr. Frank Jeans writes :—"To those few who, like myself, knew Arthur Nimmo Walker more than intimately his loss is irreparable, and I doubt whether his large circle of friends ever assessed his worth at its true value. He had all the qualities which command affection and respect—I mean a sense of duty, loyalty, and chivalry. Furthermore, his sense of humour, which was particularly charming, prevented the serious qualities from making him dull. These characteristics, though not the kind that necessarily make for a meteoric success, were bound to have made him, by his expert knowledge and skill in his special work, a leader of his profession. It was characteristic of him that the subject he gave his heart to was ophthalmia neonatorum, a disease never seen in wealthy patients, and his work in this direction will in the future be regarded as one of the landmarks of preventive ophthalmic surgery. Arthur Walker was one of the few men of our own generation whom we felt could be consulted about general matters with the absolute certainty of getting advice which was wise and ethically sound, and above all disinterested. He was always thinking of someone else—now his patients, now his colleagues, now his family. Rarely did it occur to him that there was such an individual as Arthur Walker to be considered."



ARTHUR ANDERSON MARTIN, M.D., F.R.C.S. EDIN.,
MAJOR, NEW ZEALAND MEDICAL CORPS.

Major A. A. Martin, who died on Sept. 17th of wounds received on active service, at the age of 40 years, was born in Otago, New Zealand. After a brilliant career as a scholar and prizeman, he graduated with honours at Edinburgh University in 1900, and was then house surgeon at the Hospital for Sick Children, Great Ormond-street, and senior house surgeon at the Sheffield Royal Hospital. He served as a civil surgeon in the South African Field Force, 1901-02. At the beginning of the present war he joined the Royal Army Medical Corps, and went through the battles of the Marne and Aisne, being mentioned in despatches for gallant conduct in the field. He was then for a time surgical specialist to No. 6 General Hospital, Rouen. In February,

1916, he joined the New Zealand Medical Corps, and during the seven months until his death served his corps with great personal devotion.

Major Martin will be remembered at Palmerston, New Zealand, as a practitioner who was a generous and helpful friend to a wide circle of patients. He contributed a number of surgical notes to medical journals, and as the author of "A Surgeon in Khaki" was widely known as a frank critic of men and affairs.

THOMAS CAMERON HOUSTON, M.B., CH.B. GLASG.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain T. C. Houston, who was killed on active service on August 25th, was a native of Muirkirk, where he received his



early education, and later at Kilmarnock Academy. His medical course was taken at Glasgow University, where he graduated M.B., Ch.B. in the summer of 1915, at once offering himself for service in the Royal Army Medical Corps. He was attached to the Yeomanry at Selkirk, where he was a favourite with the men, sharing in all their sports. In July of this year his request for a place at the front was granted, and in the following month he was killed by a

shell along with two officers who were standing with him.

A medical friend who knew Captain Houston intimately writes of him as a delightful companion, a keen student, full of eagerness and enthusiasm for his work. "He was intensely interested in all laboratory work. I feel sure that if he had been spared he would have done something special in research."

THOMAS STRAIN, M.D. GLASG., D.P.H. CANTAB.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain T. Strain, who died on active service on Sept. 16th at the age of 31, was the youngest son of William Strain, of Buarbrae, Wishaw, Scotland. From Hutchison's Grammar



School, Glasgow, he entered Glasgow University, graduating M.B., Ch.B. on his twenty-first birthday. He then spent a year visiting Cape Colony, Natal, Transvaal, and Orange River Colony. On his return he devoted himself to public health work, taking the D.P.H. of Cambridge in 1908. He also graduated M.D. Glasg. in 1910. Of public health appointments he was in succession the resident medical officer at Enfield and Edmonton Isolation Hospital, assistant

medical officer of health for Ayrshire, medical officer of health for Barnes and Mortlake, and just before joining the Army he was medical officer of health for Heston and Isleworth. While at the front he was twice mentioned in despatches.

One of his colleagues writes of Captain Strain: "I knew him as the first resident medical officer to this hospital, and I soon found out his sterling qualities. Method was his mainspring, and he quickly reduced his work to manageable dimensions, although immediately after taking up the duties we had to deal with a very large outbreak of diphtheria.

His mental equipment was of a high order and with his genial ways and kindness of heart he would have gone far in the particular branch of the profession which he had chosen." Captain Strain leaves a widow and two children.

GEORGE HUNTLY WOOD, M.B., B.S. DURH.,
CAPTAIN, NEW ZEALAND MEDICAL CORPS.

Captain G. H. Wood, who died at Suez on August 11th from wounds received in the recent fighting, was son of the late George Wood, a well-known shipmaster of North Shields. Educated privately, he

entered the merchant service, securing an extra-master mariner's certificate when he was 23. He was then for a time chief officer with the White Star Line. At the age of 30 Huntly Wood became interested in surgery and determined to qualify as a medical man. He was a student at the Newcastle-on-Tyne Medical School and on qualifying in 1909 held several resident appointments at the Royal Victoria Infirmary before emigrating to New Zealand,



where he built up a considerable practice at St. Andrews, South Canterbury. When war broke out he offered his services to the New Zealand Expeditionary Force and remained with it until the time of his death.

THE DIET OF THE MUNITION WORKER.

The soldier and the sailor expect to have their food provided for them on a dietary arranged for their particular needs, and now that the average high price of food¹ has rendered a nourishing and economical diet for the civilian population a matter of primary importance, the munition worker is also beginning to be dieted according to his or her special requirement. In many places canteen meals are provided where the workers come from afar; in others where accommodation was completely lacking special hostels have been erected. Dr. Leonard Hill, on behalf of the Health of Munition Workers Committee, has recently made an investigation into the cost and the nutritive value of the food supplied, and the information obtained is embodied in a report which has just been published as the second Appendix to Memorandum 3 (Industrial Canteens). He lays down the principle that the amount of food taken should be regulated solely by the loss of energy it is required to replace, and adds that fortunately the chief foodstuffs really provide all the nourishment that is requisite and consistent with health, probably better than the more highly flavoured and expensive foods which artificially stimulate the appetite. Of these cheaper foods Dr. Hill gives a list as follows: Bread, margarine, porridge, milk, herrings, cheese, beans, cabbages, oranges, and the cheaper kinds of meats. He estimates that the energy required by a man engaged in fairly light munition work is about 3500 calories of the food as purchased. The composition of canteen meals was made the subject of careful analysis, the method being as follows in each case:—

The ingredients were all thoroughly mixed after weighing each separately, so that dietaries could afterwards be constructed from the weights. An aliquot part of the intimate mixture was thoroughly dried and weighed. In the dry material protein was determined from a nitrogen estimation, the fat by ether extractions in a Soxhlet's apparatus, the ash by burning and weighing, and the carbohydrate by difference. In this way the amounts of dry protein, fat, and carbohydrate respectively in the meal were obtained, and from these the calorie value was calculated.

¹ According to the recent issue of the Board of Trade Labour Gazette the average increase in the retail price of food since the commencement of the war is 68%, of which 20% represents the rise during the last twelve months.

The average canteen dinner was found to be a good one, containing an energy value of about 1000 calories well distributed among the amounts of protein, fat, and carbohydrate. The cost of such a meal varied from 5d. to 9d., comparing very favourably with the sum of 1s. 2d. or 1s. 5d. required to purchase practically the same meal at a students' club and popular restaurant respectively. The meals brought from home by the workers were also submitted to analysis. The workers from home whose meals were obtained were not asked beforehand to bring a sample meal, but were interrogated at the entrance gates and asked to exchange the contents of their baskets for a sum ample to buy a meal at the canteen. In the case of men these meals were found to be adequate, but in the case of girls there was very wide variation, from 300 up to 1100 calories. As for the latter the breakfast meal before starting work often consists of white bread and boiled tea. The lower values connote definite under-nutrition. An investigation was also made at a well-managed hostel where each worker was at liberty to eat as much as he or she desired. The weekly cost price of food at this hostel in March, 1916, worked out at 15s. 2d. per man and 11s. 10d. per woman, the number of calories being respectively 3900 and 3000; the same figures were obtained from actual analysis and from data supplied by the management. The Memorandum ends with a table of simple daily meals designed to secure a well-balanced dietary for the assistance of caterers to munition workers. Each of the five daily diets given contains about 3000 calories at a cost of 24d. to 26½d., on the basis of prices ruling in April, 1916. The reading of the Memorandum leaves the impression that the best thought is being brought to bear on the problem of feeding the munition worker. Although there is nothing in the investigation which is very new, a valuable degree of practical certainty is being reached in regard to the minimum adequate diet required for a certain type of manual labour. No attempt has been made to modify drastically the ordinary diet of the people concerned. The herrings, cheese, and beans already mentioned do not appear very extensively in the dietaries. The Briton is naturally conservative in regard to what he eats and drinks, and there is fortunately no immediate imperative need for drastic change, but we think the opportunity should not be lost of demonstrating once and for all to the manual workers of this country that a perfect diet need not consist principally of meat and potatoes.

WAR RECORD OF THE LONDON MEDICAL SCHOOLS.

—We have now received the figures for Guy's Hospital, which should be read in conjunction with those already given (THE LANCET, Sept. 23rd, p. 579) for the other London schools.

Guy's.—Joined, 1318. Died, 42. Honours: C.B., 3; C.M.G., 5; M.C., 12; D.S.O., 10; Order of St. John of Jerusalem, 2; Order of St. Sabe (Fifth Class), 1; Croix de Guerre, 1; Other distinctions, 2; Mentioned in Despatches, 46.

PRINCESS HENRY OF BATTENBERG'S HOSPITAL.

Dr. A. J. Rice-Oxley, medical director and physician to Princess Henry of Battenberg's Hospital for Officers, has received a gratifying and well-deserved acknowledgment from the personnel of the hospital of the value and qualities of his services as a colleague and administrator. This took the form of a signed address, and ran in these words:—

To A. J. RICE-OXLEY, Esq., M.D., M.R.C.P., Medical Director and Physician to Her Royal Highness Princess Henry of Battenberg's Hospital for Officers.

30, Hill-street, Mayfair, W.

SIR,—We, the undersigned members of the medical and nursing staff of Princess Henry of Battenberg's Hospital, desire to place on record our appreciation of your services to this hospital during the two years in which it has been in existence, from August 31st, 1914, to August 31st, 1916. Your unfailing courtesy and kindness to all, and your great skill and untiring energy and labour in, and on behalf of, the hospital have both endeared you to us and encouraged us to work together for the common good, thus assisting to make this hospital, we believe, to be one of the most successful of its kind and one of the happiest in which to work.

We trust that under your direction this hospital may continue its good work until in more peaceful times our services are no longer required.

The address was signed by Princess Henry of Battenberg and by the medical officers and nurses of the institution, including Lieutenant-Colonel A. S. Woodwark, R.A.M.C., the Officer in charge of Officers' Hospitals, and Colonel W. Allan May, R.A.M.C., the President of the Special Medical Board.

FOURTH SOUTHERN GENERAL HOSPITAL (T.F.).—

This hospital is to be enlarged by the addition of Camel's Head School, Devonport. The Fourth Southern General Hospital (T.F.) will now comprise the Ford House Hospital and auxiliary establishments at Salisbury-road, Hyde Park-road, and Camel's Head. Lieutenant-Colonel H. W. Webber is in command.

MONTENEGRIN RELIEF FUND.—

A central office for the Montenegrin Red Cross and Relief Fund has been opened at 11, Victoria-street, S.W. The fund, which has been registered under the War Charities Act, sends food and hospital necessities to Montenegro, and donations are urgently needed. They may be sent to Lady Roper Parkington at 58, Green-street, Park-lane, W.

HOSPITAL FOR WOUNDED OFFICERS.—

A new Russian hospital for the accommodation of British wounded officers was opened in temporary premises in South Audley-street, Mayfair, W., by the Prime Minister on Oct. 17th. As we announced last week, the donors are M. Mouravieff-Apostol, Chamberlain of the Russian Court, and his wife. Dr. C. Gould-May, who has been employed at the Anglo-Russian Hospital in Russia, will be in medical charge; the consulting staff being: physician, Dr. Wilfred J. Hadley; surgeons, Mr. R. P. Rowlands and Mr. Ivor Back; ear, Mr. H. J. Marriage; throat and nose, Mr. W. G. Howarth; radiographer, Mr. C. Gouldesborough; anaesthetist, Mr. G. A. Jones; and bacteriologist, Mr. W. B. Weir.

WAR HOSPITALS IN INDIA.—

The Indian Council of the St. John Ambulance Association have issued another special war circular appealing for money to "enable them to meet a demand just received from the military authorities for a large supply of supplementary equipment for certain hospitals which are being opened in India for sick and wounded arriving from the front." Commenting on this appeal, the *Pioneer* says that the time would seem to have come when the Government should reconsider their position in connexion with these war hospitals, and this is the feeling generally. Not even the most ardent advocate of economy would object to the expenditure of public money on improving the amenities of life in the new hospitals in India. Liberal outlay in this direction would indeed be generally welcomed; and, if necessary, orders should be passed which would meet possible technical objections by the Accounts and Audit Departments. The Government of India may or may not have been justified in framing a war budget of modest dimensions; it will certainly not be justified in extending the policy of financial caution to the case of the wounded, especially as the articles immediately required can apparently be bought for hard cash in the open market.

THE Hospital Unit recently sent out by the

British Red Cross Society and the Order of St. John, under the command of Dr. F. G. Clemow, C.M.G., has arrived at Galatz, Rumania.

TRAFALGAR DAY will be celebrated at the

headquarters of the British and Foreign Sailors' Society, Commercial-road, London, E., by a reception and concert for wounded sailors from the adjacent hospitals.

THE LATE EDITH CAVELL.—

In Paris on Oct. 11th, the first anniversary of the death of the heroic English nurse, a hospital and school bearing her name was opened as a memorial by M. Justin Godart, one of the Under Secretaries of State for War. The hospital contains 100 beds, but it is only a temporary building pending the erection of more extensive premises by public subscription. Sir George Frampton has presented the hospital with a bust of Miss Cavell. Professor Hartmann and Madame Curie are members of the staff. On the same day a memorial was unveiled in the nurses' dining-room at the Shoreditch Infirmary, where Miss Cavell was at one time assistant matron. Dr. C. Addison, who was present at the ceremony, paying a tribute to the noble example of Miss Cavell's life, said that the same unselfish motive which had inspired her life had stimulated many workers and business men at home. The execution of the most cherished hope of Miss Cavell—namely, that homes of rest for nurses should be established, has taken a practical form, as has already been announced. The honorary treasurer of the movement is Mr. Charles Campbell McLeod, 10, Lime-street, London, E.C., and the honorary secretary Mr. Wallace Braby, 25, Victoria-street, London, S.W.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the quarterly examination in Practical Pharmacy held on Oct. 12th the following candidates were successful:—

Margaret Gladys Best, London School of Medicine for Women; James Bassett Brash, St. Bartholomew's Hospital; John William Chadwick, Manchester University; Jane Crawford, London School of Medicine for Women; Dennis Reginald Curnock, Charing Cross Hospital; Albert William Abell Davies, Guy's Hospital; Herbert Davies and Sidney Richard Eccles Davies, St. Bartholomew's Hospital; Martin Joseph de Lemos, King's College Hospital; William Allison Drake and Mohammed Nour Eldin, St. Bartholomew's Hospital; Leonard Henry Brittan Evans, Cambridge University and Guy's Hospital; Edgar Thomas Flood, St. Mary's Hospital; Edwin Stowell Gawn and William Francis Gawn, Liverpool University; Geoffrey Herbert Gidlow-Jackson, Cambridge University and London Hospital; Melik Gurgis, University College Hospital; Edward Francis Strathearn Gordon, Cambridge University and St. Bartholomew's Hospital; Thomas Sacheverell Greenaway, Westminster Hospital; Reginald Rowley Halsall, Manchester University; Douglas Vernon Halstead, Guy's Hospital; John Hollings, London Hospital; Geo. Geo. Raymond Hubbard, Guy's Hospital and private study; John Haslam Johnston, Charing Cross Hospital; Thomas Edward Moody-Jones, University College, Cardiff; Geoffrey Burman Lowe, Cambridge and Birmingham Universities; Kenneth Alexander Ingleby Mackenzie, Oxford University and St. Bartholomew's Hospital; Arthur Harry Morris, Bristol University; Hussein Noorat, St. Bartholomew's Hospital; Aron Ber Pastel, Paris and Charing Cross Hospital; Walter Erichsen Powell, Charing Cross Hospital; Charles Farrell Rainer, London Hospital; William Sleeman Roberts, St. Mary's Hospital; Edith Marjorie Rooke, London School of Medicine for Women; Ronald Cunliffe Shaw, Manchester University; and Greta Isabel Yeoman, London School of Medicine for Women.

UNIVERSITY OF GLASGOW.—The following results of examinations at Glasgow University are announced:—

DEGREES OF M.B., CH.B.

The following have passed in the subjects indicated—**A., Anatomy; P., Physiology; M., Materia Medica and Therapeutics; Path., Pathology:**—

Roderick Bethune, Path.; Alexander Black, Path.; William George Burns, A. P.; Michael John Cahalan, Path.; Malcolm Chalmers, Path.; John Parker Chisholm, M. Path.; Hugh Auld Cochrane, Path.; Alexander Conner Connell, M.; Edward Mitchell Erskine Cumming, M.; Archibald Brown Smith Drysdale, Path.; William Edgar, M.; Basil William Henry Fergus, Path.; Duncan Finlayson, Path.; James Paton Fleming, Path.; Allan Donald Fraser, P.; George Keith Fulton, M. Path.; James Biggam Douglas Galbraith, M. Path.; Matthew Forsyth Gibson, A. P.; Francis Denis Gillespie, A. P.; Adam Smith Goudie, Path.; James Smith McLean Gray, Path.; John Forrest Hamilton, A. P.; John Gordon Harrower, Path.; Andrew Henderson, Path.; James Charles Hendrie, Path.; Morris Hyman, Path.; John Irving, Path.; Robert Paterson Jack, M. Path.; James Patrick Kilty, Path.; Chung Un Lee, A. P.; Douglas Marshall Lindsay, P.; Jacob Lipschitz, Path.; William Wilson Lundie, M.; Duncan MacColl, M.; Robert Tweedie McGibbon, Path.; Thomas McGowan, Path.; James Athole Campbell MacGregor, Path.; John William Mackay, Path.; William Stanley Lones McLeish, Path.; William McLinden, Path.; Findlay Kerr Macmillan, M.; John Spence Melghan, A. P.; John Muil Melvin, Path.; William Duff Miller, Path.; William Napier, Path.; Bryce Frood Niblock, M.; Isaac Ladipo Oluwale, M. Path.; John Bernard O'Neill, M.; Norman Bligh Peacock, Path.; George Pearson, Path.; Robert James Peters, Path.; Thomas Poole, M.; Rahmat Ullah Qureshi, M.; Andrew Riddell, M. Path.; Samuel Murdoch Riddell, Path.; John Joseph Robertson, Path.; Thomas Stark, M. Path.; Donald Stewart, A. P.; Turner Stewart, Path.; Archibald S. Strachan, Path.; Joseph S. Pat. Adam Stewart, Path.; Adolph Samuel van Colter, M.; James Churchill Vaughan, Path.; William Andrew Walker, M. Path.; Harold Douglas Wallace, Path.; John Allan White, Path.; Thomas McKimming Wilson, Path.; George Macfate Wishart, Path.; and William Young, M. Path.

Women.—Helen Frances Allinson, A. P.; Ellen Davidson Anderson, M.; Grace Hay Anderson, P.; Margharita Mary Lamont Couper, Path.; Grace Anderson Fleming, Path.; Mary Brown Gillespie, M.; Jane Evelyn Hanson, Path.; Janet Whyte Hepburn, Path.; Elizabeth Smith Inglis, P.; Margaret Logan, A.; Elizabeth Cochrane Loudon, Path.; Mary Jessie Macdonald, Path.; Agnes Purcell McGavin, M. Path.; Margaret Turner George, Path.; Maud Elizabeth Drysdale Mackinnon, M. Path.; Margaret Elizabeth MacLaron, A. P.; Caroline Jane MacLennan, A. P.; Margaret Gardner McVey, Path.; Florence Frances Mitchell Milne, Path.; Mercedes Margaret Morton, M.; Georgina Murdoch, A. P.; Elizabeth Park Young Paterson, Path.; Vida Johnston Perry, Path.; Agnes Petrina Routledge, Path.; Eliza Dorothea Sandison, A.; Marjory Mary Scanlan, M. Path.; Jane Elder Shortt, M.; Margaret Marion Catherine Steedman, Path.; Muriel Amy Stowe, A. P.; Dorothea Helen Suttie, Path.; Jean Banks Thomson, A. P.; and Lydia Ida Huber Torrance, Path.

The following have passed in the subjects indicated—**B., Botany; Z., Zoology; P., Physics; C., Chemistry:**—

Alexander Gardner Aitken, B. P.; William Simpson Aitken, B. P.; Daniel Erwin Alley, Z.; Ralph William Sydney Ashby, B.; Alexander Baird, C.; Gavin Haddow Boyd, P.; William Brock, B.; Douglas Brown, B.; Alexander Orr Bruce, B. P. C.; Stewart Caldwell, B. P.; Douglas Hugh Cluterebeck, B. Z.; Archibald Robson Cook, P.; William Davie, B. P.; James Dawson, B. P.; Alexander Smith Dick, C.; James Ferguson Dunn, B.; Andrew

NalSmith Fergus, B. P.; Bruce Paterson Gardner, Z.; Hugh Shaw Dunn Garven, B. P.; Westall Geyer, B. P.; Robert Dick Gillespie, B. P.; Alan Dakers Gowans, B.; Gerald Francis Graham, Z. C.; Ross Alfred Grant, B. P.; Alexander Gray, B.; John Andrew Hamilton, B. P.; George Harvey, Z. C.; Hugh Wardrop Howieson, B. Z. P. C.; Thomas Downie Hunter, Z.; Jack Hurwich, B. P.; Peter Hutchison, B. Z. C.; George Jamieson, Z.; Lennox Matthew Johnston, B. P.; William Macdonald Johnston, B. P.; Hugh Kay, B. P.; David Allison Ker, B. P.; James Arthur Kerr, B. U.; Crawford Alexander Lindsay, B. P.; Alexander Logan, P.; Andrew Logan, B. Z. C.; George M'Alpine, Z.; James Macdonald, P.; John M'Dougall, B. P.; Thomas John M'Kall, B.; George MacKerracher, B. P.; Patrick M'Kay M'Killip, B. P.; Archibald M'Whinney, Z.; Matthew Flindlay Gathrie Main, B. P. C.; Arthur Markson, B. P.; David Melkie, B. P.; Edin Ernest Miller, B. P.; Malcolm James Miller, B. Z.; Peter Milligan, B. P.; John Malcolm Lamont Mitchell, B. P.; William Muir, Z. C.; James Paton Neilson, B. Z. P.; William Guthrie Niblock, Z. P.; Francis Ignatius O'Brien, Z. P.; John Smith M'Laren Ord, B.; Irvine Paterson, B. Z. P. C.; Thomas Core Porter, B. P.; Archibald Rae, B. Z. P. C.; Joseph Francis Reilly, B. P.; Cyril Gladstone Richards, B. P.; William John Brownlow Riddell, B. P.; John James Austin Ritchie, B. P.; Ian Christie Robertson, B. Z. C.; Leopold Harold Salzmann, Z.; Ian MacRae Sandlands, Z. C.; Thomas Stewart Sargent, B. Z. P.; Wilfrid Henry Scott, B. P.; Henry Edmund Seiler, B. P.; John Shanks, Z. C.; Robert M'Dougall Smellie, B. P.; Archibald Gordon Smith, B. P.; Charles Milliken Smith, B.; David Craydon Smith, M. P.; Andrew Snaddon, B. P.; John M'Laughland Straug, B. P.; Charles Noel Temple, C.; James Nisbet Tennent, B. P.; Daniel MacLachlan Thompson, B. P.; Jonathan Robson Turner, B. Z. P. C.; John Miller Usherwood, B. Z.; Richard Walkingshaw, B. P.; James Dunlop Whiteford, B. Z. P.; Alexander Fraser Whyte, B. P.; James David Wilson, B. Z. P.; William Wilson, B. P.; John Wingate, B. P.; and John Wyllie, B. P.

Women.—Annie May Alexander, B. C.; Martha Lindsay Anderson, B. Z.; Marion Bell Armstrong, B. P.; Mary Balm, B. P.; Muriel Cecil Sydenham Balfour, B. Z. P.; Rosa Bass, B. Z. P.; Margaret Bennett, B.; Mary Kleanor Berry, B. Z.; Eliza Margt. Victoria Hazelwood B. Bird, B. P.; Margaret Watson Blackwood, B. P.; Marion Cadzow Boyd, B. Z.; Elizabeth: Evelyn Brown, B. P.; Muriel Jenny Brown, B. P.; Lillias Elizabeth Barr Buchanan, B. P. C.; Jemima Marianna McKechnie Calder, B. P.; Gladys Muriel Chapell, Z.; Christabel Lille Margaret Charlesworth, B. P.; Annie Brown Cooke, B. Z. P.; Ellen Bell Cowan, B. P. C.; Margaret Beveridge Calder Craig, B. P.; Edith Margaret Davidson, B. P. C.; Elsie Florence Farquharson, B. P.; Elizabeth Jardine Findlay, B. P.; Christian McVilvie Fleming, B. P.; Dorothy Jean London Gallie, Z. P. C.; Agnes Mary Gibson, B. Z. P. C.; Margaret Elizabeth Gibson, B. P.; Muriel May Gilmour, B. P.; Agnes Scott Glover, B. P.; Mary Archibald Grant, B. Z. P. C.; Mary Burns Grant, B. P.; Brunhilde Mary Grieve, B. P.; Agnes Brownlie Hart, B. O.; Isabel Edgar Russell Jeffrey, B. Z. P.; Margaret Longwill Johnston, B. P.; Dora Karnowski, B. Z.; Anna Taylor Kellock, B. Z. C.; Eleanor Heald Kelly, B.; Annie Campbell Kerr, Z.; Jane Stobo Knight, B. P.; Agnes Annie Lawson, B. Z.; Isabella Lumden, B.; Moira Elpeth Nichol MacAlpine, B.; Jane Carrick Macdonald, B. P.; Mary Johnston Macfarlane, B. P.; Jean MacIver Macintosh, B. Z. P. C.; Janet Findlay M'Lees, B. P.; Alexandrena Miller MacLennan, B. P.; Marie Josephine M'Naught, B. Z. P.; Laura Margaret Dorothea Mill, B.; Marjorie Mitchell, Z.; Janet Dick Montgomery, B.; Elsie Niblock, B. P.; Annie Girdwood Pollock, B. P.; Isobel Reid, B. P. C.; Winifred Ethel Douglas Ross, B. C.; Mary Russell, B. P.; Dorothy Elsie Agnes Rutherford, B. Z.; Elizabeth Helen Mary Sillmon, B.; Marion Smellie, B. P.; Alexandra Walker Smylie, B. P.; Mary Steven, B. Z. P.; Christina Smith Stoddart, B. P.; Margaret Mavor Stuart, B. P. C.; Dorothy Mary Summers, B. P. C.; Agnes Dunbar Temple, B. P.; Carolina Jane Teasler, B. Z. P.; Marian Thom, B. P.; Dorothy Brownlee Thomson, B. Z. C.; Eleanor Marjorie Torrance, B. P.; Jeanie Livingstone Darling Wilson, B. P.; Mary Lyle Wilson, B. P.; Helen Frances Wingate, B. P.; and Elizabeth Young, B. Z. P.

LITERARY INTELLIGENCE.—Messrs. D. Appleton and Co. will shortly issue new editions of the following works: 1. "The Principles and Practice of Medicine," by Sir William Osler, Bart., M.D., F.R.S. Revised eighth edition. The need for reprinting has given opportunity for considerable revision, notably in the section dealing with infectious diseases. 2. "Preventive Medicine and Hygiene," by Milton J. Rosenau, M.D. New second edition. Amongst the chapters rewritten are those on leprosy, beri-beri, pellagra, and quinine prophylaxis for malaria. 3. "Diseases of Infancy and Childhood," by L. Emmet Holt, M.D., Sc.D., LL.D. New seventh edition. The whole book has been completely revised, with the addition of 16 new chapters and 15 new illustrations. 4. "A Text-book of Bacteriology," by Philip Hanson Hiss, Jr., M.D., and Hans Zinsser, M.D. New third edition.

INFANTILE PARALYSIS IN ABERDEEN.—Dr. Matthew Hay, medical officer of health of the city of Aberdeen, in his monthly report to the Aberdeen town council, states that during the month of September 10 cases of infantile paralysis were reported, making 76 cases in all since the outbreak of the disease up to the end of September. During the present month, October, 3 further cases have been notified, 2 of which, however, took ill in September, and 1 as far back as May. The type of the disease continues mild, only 3 deaths having occurred. All except 2 of the cases for September were in houses of three rooms or under, and with

2 exceptions all the children were under 4 years of age. No contact or association with previous cases was established for any of the cases. Proceeding, Dr. Hay reviews the concurrent, though greatly more severe, epidemic of poliomyelitis in New York, basing his remarks on the weekly bulletins issued by the New York Department of Health. In New York there was only slight evidence of the disease in May, but in June the epidemic was definitely established, the cases multiplying with great rapidity (320 in June, 3731 in July, 4104 in August), and then subsiding quickly from the middle of August. Up to the end of August 1932 deaths occurred, nearly 1 in 4. The type of the disease seems to have been severe from the beginning and to have remained so up to the end of the period for which information is available. In Aberdeen there were also a very few cases in May, and the epidemic was definitely started in June. Referring to the general belief in this country that the percentage of cases among adults was considerable, Dr. Hay divides the cases in New York and in Aberdeen into the following age-groups: (a) cases under 1 year; (b) cases above 1 and under 3 years; (c) cases above 3 and under 5 years; (d) cases above 5 and under 10 years; and (e) cases above 10 years, and finds the following percentage for the two places: Aberdeen, 21, 55, 15, 8, and 1.3; New York, 11, 57, 15, 14, and 2.7. These percentages show the percentage among infants, in proportion to the total cases, somewhat fewer in New York than in Aberdeen, and the cases among persons over 5 years of age somewhat more numerous, but in neither town does it show the proportion of cases among adults to be high.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—A quarterly meeting of the Council was held on Oct. 12th, Sir William Watson Cheyne, the President, being in the chair. Mr. Vincent Warren Low was introduced and made a declaration in the terms of the oath prescribed by the Charter of 1800 and took his seat as a member of the Council. The best thanks of the Council were given to Sir John Bland-Sutton for presenting to the museum a collection of four gorilla skeletons, the skeleton of a chimpanzee, and some skulls. It was resolved that, as recommended by the Library Committee, the library shall be closed at the hour for screening lights. Sir John Bland-Sutton, on behalf of the Committee on the Annual Report of the Council, submitted a draft report to be presented to the Fellows and Members at the annual meeting on Thursday, Nov. 16th. The report was approved and adopted. Sir George H. Makins was re-elected a member of the Committee of Management. The Council nominated as the twenty-fourth Jenks scholar Mr. John Sinclair Shadwell, formerly of Epsom College and now at Guy's Hospital Medical School. A letter was read from Lieutenant-Colonel James W. Barrett, R.A.M.C., F.R.C.S., calling the attention of the Council to the disabilities under which Fellows of the College when resident abroad, laboured as regards taking part in the election of members of Council. A committee was appointed to consider and report as to the possibility of making a long interval between the date of nomination of candidates and the election.

MEDICAL MAYORS IN THE WEST OF ENGLAND.—The Lord Mayor of Bristol (Mr. Barclay J. Baron, M.B., C.M. Edin.), at the unanimous wish of the city council, has consented to be re-nominated for a second term of office.—Alderman H. Gordon Cumming, F.R.C.S. Eng., has accepted the invitation of the Torquay town council to become mayor for the ensuing year.

GIFTS OF THE KHARTOUM CHAPTER.—The Khartoum Chapter of the Daughters of the British Empire in Wilmette, Illinois, U.S.A., has endowed a bed for a year in Roehampton House, one of the Queen Mary Auxiliary Convalescent Hospitals for crippled sailors and soldiers. The bed is known as the "Khartoum Chapter Bed." The chapter has also sent hospital supplies to Beaufort War Hospital, Bristol, and to the Scottish National Red Cross Hospital in Glasgow.

THE WILL OF THE LATE SIR VICTOR HORSLEY.—Probate of the will of the late Sir Victor Horsley has been granted to Lady Horsley, the property being of the value of £35,000. The will directs that within 24 hours of his death a post-mortem examination of his body shall be made by the pathologist of the National Hospital for the Paralyzed and Epileptic, Queen-square, and that his brain and skull should be given to and preserved by the Neurological Society of London, and the remainder of his body to the museum of University College for the preparation of such specimens as the curator may think fit; the pathologist who makes the examination to be paid 10 guineas. The testator gives his professional furniture, books, and instruments to such of his children as may enter the medical profession, and if none of them do, then to the pathological department of University College. All other his property he leaves to his wife for life, with remainder to his children as she may appoint.

THE LATE DR. J. G. MACINDOE.—James Gray Macindoe, M.B., C.M. Edin., late Major, R.A.M.C. (T.F.), died recently at his residence, Torrington, Devon, in his forty-eighth year. The deceased was well known and highly respected, and had an extensive practice. He held several appointments and was medical officer to the workhouse and for two districts of the Torrington union, and also public vaccinator.

ASSISTANT MEDICAL OFFICER OF HEALTH AT PLYMOUTH.—The Plymouth borough council had recently decided to advertise for an assistant medical officer of health, at a commencing salary of £300, increasing by £25 yearly to £400 per annum. The candidate was required to devote the whole of her or his time to the work, which was to be principally in connexion with the maternity and child welfare work of the council. At the last meeting of the council it was stated that the commencing salary offered for the post had to be increased to £350, "because the medical papers refused to accept these advertisements with a less salary."

THE LATE DR. JOHN R. HAMILTON.—Dr. Hamilton, a well-known medical practitioner in the south of Scotland, died on Oct. 7th at his residence, Elm House, Hawick, Roxburghshire, aged 63 years. He graduated M.B., C.M. Edin. in 1875, taking the L.R.C.S. Edin. in the same year, and the M.D. of his University, with commendation, in 1878. He was keenly interested in all that concerned the welfare of his profession and was a member of the council of the British Medical Association, being at one time chairman of the Scottish committee.

THE HARVEIAN ORATION of the Royal College of Physicians of London was delivered on Wednesday afternoon last, Oct. 18th, by Sir Thomas Barlow.

THE GRESHAM LECTURES will be delivered on Tuesday, Wednesday, Thursday, and Friday of next week at Gresham College, Basinghall-street, E.C., by Dr. Harry Campbell.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Parliamentary Session.

PARLIAMENT re-assembled on Tuesday, Oct. 10th. The first duty of the Legislature was to authorise the expenditure of money for the prosecution of the war. For that purpose a further Vote of Credit to the amount of £300,000,000 has been passed by the House of Commons, and at the current rate of expenditure this sum will suffice until Christmas. This brings the aggregate of the Votes of Credit sanctioned since the beginning of the war up to £3,132,000,000. The Prime Minister, in reviewing the military situation, said that this was not a moment for faint hearts, faltering purpose, or wavering counsel. "The ends of the Allies," he continued, "are well known. They have been frequently and precisely stated. They are not selfish ends. They are not vindictive ends, but they require that there shall be adequate reparation for the past and adequate security for the future. On their achievement we in this country honestly believe depend the best hopes of humanity." The House of Commons has been giving its attention almost entirely to questions relating to the war—man-power, volunteers, Army contracts, and food supplies.

Health of Troops in Mesopotamia.

In view of the situation in Mesopotamia earlier in the year, Mr. ASQUITH's few remarks on the present position are worthy of note. He said that the hot weather of the past month had hampered active operations, but substantial progress had been made in the improvement of our rail and river communications. The health of the troops had also greatly improved. General MOORE assumed the command of the forces in Mesopotamia on August 28th, and his most recent reports indicated that real headway was being made in overcoming the difficulties which had hitherto hampered our operations in this theatre.

HOUSE OF COMMONS.

WEDNESDAY, OCT. 11TH.

Sale of Cocaine.

Mr. HOGGE asked the Home Secretary whether he was in a position to state whether he intended to carry out his proposed restrictions on the use of cocaine by unregistered dentists.—Mr. H. SAMUEL answered: The exemption which allows unregistered dental practitioners to purchase solutions containing 0.1 per cent. or more of cocaine has been extended to Oct. 31st. I am satisfied that there is no need to extend

the exemption beyond that date, as other efficient local anaesthetics will be available in sufficient quantities.

Mr. HOGGE: Will the right honourable gentleman apply this restriction also to registered dentists so that the whole supply may be properly controlled?—Mr. H. SAMUEL: I am advised that it is in no way necessary to apply restrictions to registered dentists, because all those dentists are known from the very fact of registration, but any person could call himself an unregistered dentist and could obtain a supply of cocaine if this restriction were not in force.

Mr. HOGGE: Is the right honourable gentleman aware that a large number of what he calls registered dentists, 1600 are not qualified and got on the Register when legislative provisions were made with regard to registration?—Mr. H. SAMUEL: They have a recognised status.

THURSDAY, OCT. 12TH.

Incapacitated Prisoners of War.

Mr. MALCOLM asked the Under Secretary for Foreign Affairs whether the offer of the Danish Government to receive invalid British prisoners of war had been accepted; and whether any such were now interned in Denmark.—Mr. J. HOPE (on behalf of Lord ROBERT CECIL) answered: We have informed the Danish Government that we highly appreciate their generous offer, which has received our most careful consideration. We understand, however, that ample accommodation for prisoners of war is still available in Switzerland, the only difficulty encountered in the operation of the arrangement in force with that country being that of inducing the German Government to agree to the transfer thither of all British officers and men who are entitled to the privilege. In these circumstances we feel that it would be premature to extend the arrangement to other neutral countries at present, but should the accommodation in Switzerland prove insufficient in future, we shall be glad to reconsider the kind offer made to us by the Danish Government.

Replying to a further question, Mr. HOPE said that an agreement had been arrived at with the Bulgarian Government for the exchange of incapacitated prisoners of war.

The Price of Milk.

Answering Mr. BARNES, Mr. RUNCIMAN (President of the Board of Trade) said: I am aware that in certain London districts the price of milk has recently been raised from 5d. to 6d. per quart, the price which has been in vogue in several other districts for several months. The Board of Trade, in conjunction with the Board of Agriculture, have been following the course of milk prices with careful attention. They have also obtained certain data regarding the cost of production and distribution, but as stated, in the report of the Departmental Committee on Prices, it is admittedly a very difficult thing to state accurately the cost of production of a gallon of milk. Several of the recommendations contained in that report deal, however, with the question of milk prices, and immediate action will be taken on those where practicable. With a view to enabling dairy-farmers to meet the strain of work during the winter, the further calling up of their men for military service has been deferred, and it is expected that they will respond by offering their milk on terms which will not involve any further rise in retail prices.

Medical Supplies in Mesopotamia.

Sir JOHN JARDINE asked the Financial Secretary to the War Office whether he was in a position to make a statement about any increase of transport on the River Tigris and between Kurma and Nasiriyah, on the River Euphrates; and whether it was now practicable without unreasonable delay to send on from Basra to the garrisons on those rivers supplies of medicines and hospital appliances and comforts sent for their use.—Mr. FORSTER replied: Yes, sir, since the end of July, when the War Office took over control, there has been a large increase in the river transport available in Mesopotamia. The increase is already 64 per cent., and will shortly be 100 per cent. The whole system has been reorganised, and there is ample transport available to take up promptly all the medical stores required.

Experiments with Chlorine Gas.

Mr. CHANCELLOR asked the Home Secretary whether the 84 experiments reported in the return for 1915 as having been performed for the Medical Research Committee by Dr. M. W. Flack included or were in addition to those performed by him on cats and other animals with chlorine gas; whether these gas experiments were paid for out of National Health Insurance funds; and, if so, whether the Auditor-General's attention was called to the matter and the payments passed by him as a proper use of National Insurance funds.—Mr. C. ROBERTS (representing the National Insurance Commissioners) wrote in reply: The experiments referred to in the question are included in the 84 reported in the return. The gentleman referred to is a member of the staff of the Medical Research Committee established by Regulations made under Section 16 of the National Insurance Act, 1911, and the expenditure of that Committee is made from moneys provided by Parliament

under Subsection (2) (b) of that section. The accounts for the matters in question come before the Controller and Auditor-General, who will make such observations as he thinks fit upon them to the Public Accounts Committee in due course.

TUESDAY, OCT. 17TH.

Dentists in Mesopotamia.

Answering Sir JOHN JARDINE, Mr. LLOYD GEORGE (Secretary for War) said: The force in Mesopotamia has been supplied with all the dentists and dental mechanics for whom it has asked. The Army Council were quite recently informed by cable that no more were required. The distribution of the dentists and dental mechanics sent out is, of course, a matter for the discretion of the local military authorities.

Sanitary Conditions of Knockaloe Camp.

Sir W. BYLES asked the Home Secretary whether he had received complaints of the unhealthy and insanitary condition of the Knockaloe camp, Isle of Man; and whether, in view of the approaching winter, he would see that the huts were weather-tight, that the drinking water was filtered, that the sanitary and sleeping arrangements were adequate, and that food was sold to those who could buy it at cost price.—Mr. H. SAMUEL wrote in reply: Knockaloe camp receives the constant attention of the insular authorities and of the Destitute Aliens Committee on behalf of the Home Office. The sanitary arrangements have recently been the subject of special investigation; a new system of drainage is under construction and its completion is being expedited. Steps are being taken to ensure that the huts will be proof against the winter weather when it comes. The supply of drinking water is excellent and is the same as that used by the officers and the town of Peel. The health records are very good. Food is sold in the canteen at low prices, and any profits derived from the sale are handed over by the camp authorities to prisoners' committees and devoted to the general welfare of the prisoners.

WEDNESDAY, OCT. 18TH.

Typhoid and Paratyphoid Fever amongst Troops.

Answering Mr. CHANCELLOR, Mr. FORSTER (Financial Secretary to the War Office) said: Up to August 25th, 1916, 1501 cases were finally diagnosed as typhoid fever amongst the British troops in France, 903 amongst inoculated men and 508 amongst men not inoculated. There were 166 deaths, 47 of which were amongst the inoculated and 119 amongst uninoculated. To the same date there were 2118 cases of paratyphoid fever, 1968 amongst inoculated men and 150 amongst men who had not been inoculated. There were 29 deaths, 22 of which were amongst the inoculated and 7 amongst the uninoculated.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index). When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BERMONDSEY PARISH.—Medical Officer. Salary £250 per annum.
BIRMINGHAM, LITTLE BROMWICH FEVER HOSPITAL.—Female Assistant Medical Officer. Salary £300 per annum, with board, &c.
BRISTOL ROYAL INFIRMARY.—House Physician. Salary at rate of £120 per annum, with board, &c.
CAMBRIDGESHIRE ASYLUM, Fulbourn, near Cambridge.—Junior Assistant Medical Officer, unmarried. Salary £200 per annum, with board, &c.
CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Second House Surgeon. Salary £150 per annum, with board, &c.
COLCHESTER, ESSEX COUNTY HOSPITAL.—House Surgeon.
DUDLEY, GUEST HOSPITAL.—Senior Resident Medical Officer. Salary £150 per annum, with board, &c. Also Assistant House Surgeon, for six months. Salary £120 per annum, with board, &c.
EVELING HOSPITAL FOR CHILDREN, Southwark, S.E.—House Physician. Salary at rate of £160 per annum, with board, &c.
HÔPITAL FRANÇAIS, 172, Shaftesbury-avenue, W.C.—Surgeon to Throat, Nose, and Ear Department.
HUDDERSFIELD COUNTY BOROUGH EDUCATION AUTHORITY.—Assistant School Medical Officer. Salary £300 per annum.
HULL, CITY AND COUNTY OF KINGSTON-UPON-HULL INFECTIOUS DISEASES HOSPITALS.—Resident Medical Officer. Salary as arranged, with board, &c.
ITALIAN HOSPITAL.—House Surgeon for six months. Salary £80 per annum, with board, &c.
LEICESTER ROYAL INFIRMARY.—Pathologist to Infirmary and Venereal Diseases Section. Salary at rate of £500 per annum. Also Medical Officers in Charge of Clinics and Beds. Salary £200 for Male Officer and £150 for Female Officer. Also Vacancy on Resident Surgical Staff. Salary £250 per annum.
LONDON LOCK HOSPITAL (MALE), Dean-street, Soho, W.—House Surgeon for six months. Salary at rate of £150 per annum.
MANCHESTER, HULME DISPENSARY, Dale-street, Stretford-road.—House Surgeon. Salary £250 per annum, with apartments, &c.
MANCHESTER ROYAL EYE HOSPITAL.—House Surgeon. Salary £120 per annum, with board, &c.
MANCHESTER ROYAL INFIRMARY CONVALESCENT HOSPITAL, Cheadle.—Resident Medical Officer, unmarried. Salary £225 per annum, with board, &c.

NEWCASTLE-UPON-TYNE AND NORTHUMBERLAND SANATORIUM FOR CONSUMPTIVES, Barrasford, North Tyne.—Resident Medical Officer.
 NEWCASTLE-UPON-TYNE, ROYAL VICTORIA INFIRMARY.—Four House Physicians, Four House Surgeons, Accident Room House Surgeon, House Surgeon to Aural and Ophthalmic Departments, House Surgeon to Skin and Gynaecological Departments, and House Surgeon to Out-patient Dressing Department.
 NOTTINGHAM GENERAL HOSPITAL.—Two House Physicians and One Assistant House Surgeon for six months. Salary at rate of £250 per annum each, with board, &c.
 PERTH, COUNTY AND CITY ROYAL INFIRMARY.—House Surgeon. Salary at rate of £200 per annum, with board, &c.
 PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—Assistant in X Ray and Finsen Light Department.
 QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Assistant Resident Medical Officer for four months. Salary at rate of £50 per annum, with board, &c.
 RHONDDA URBAN DISTRICT COUNCIL.—Temporary Assistant Medical Officer of Health and School Medical Officer. Salary £250 per annum.
 SCOTISH WOMEN'S HOSPITALS, 2, St. Andrew-square, Edinburgh.—Medical Women for Serbian Unit in Russia. Salary at rate of £200 per annum. Also Radiographer (women).
 SHEFFIELD CITY HOSPITALS, INFECTIOUS DISEASES.—Resident Medical Officer at Lodge Moor Hospital.
 SHEFFIELD, ROYAL INFIRMARY.—Two House Surgeons. Salary £100 per annum, with board, &c.
 SOUTH LONDON HOSPITAL FOR WOMEN, 103, South Side, Clapham Common, S.W.—Female House Physician and House Surgeon for six months. Salaries at rate of £100 per annum, with board, &c. Also Temporary Female Assistant Physician to Children's Department.
 WALFALL AND DISTRICT HOSPITAL.—Assistant House Surgeon and Anaesthetist. Salary £150 per annum, with board, &c.

Births, Marriages, and Deaths.

BIRTHS.

DE MOWBRAY.—On Oct. 16th, at Grosvenor House, Southampton, the wife of Ralph M. de Mowbray, F.R.C.S. (temporary Lieutenant, R.A.M.C.), of a son.
 FRANKAU.—On Oct. 13th, at Tenby-mansions, Nottingham-street, W., the wife of Claude H. S. Frankau, F.R.C.S., Major, R.A.M.C., of a son.
 McMULLAN.—On Oct. 11th, at Southsea, the wife of George McMullan, M.B., Blair Lodge, Wallingford, of a daughter.

MARRIAGES.

ASHTON—MORHAM.—On Sept. 23rd, at 17, Mansion House-road, Edinburgh, by the Rev. James Lumsden, B.D., Minister of Tolbooth Parish, temporary Captain Basil Cedric Ashton, R.A.M.C., to Agnes May, youngest daughter of George Morham, Edinburgh.
 HARDY—KITCHIE.—On Sept. 14th, at the Parish Church, Creich, Cupar, Fifeshire, Captain Thomas Lionel Hardy, R.A.M.C., to Elizabeth Clark, youngest daughter of the Rev. John Ritchie, Minister of Creich.
 STEWART—MYLNER.—On Oct. 12th, at Peolali, India, Captain William Stewart, R.A.M.C., to Dorothy Evadne, younger daughter of Ernest Mylner, Esq., of Behea, India, and of Ellenborough House, Roehampton, Surrey.

DEATHS.

FARR.—On Oct. 11th, suddenly, at Earl's Court-road, S.W., Frederick Arthur Farr, M.R.C.S., L.R.C.P., in his 67th year.
 HICKMAN.—On Oct. 16th, at "The Hollies," Wanstead, Herbert Vigers Hickman, M.B. Lond., aged 54.
 LACEY.—On Oct. 11th, died of wounds, Lieutenant William S. Lacey, R.A.M.C., D.E.C.P. Lond., M.R.C.S. Eng., L.D.S. Eng., D.M.D. Harvard, aged 29 years.
 PUZKY.—On Sept. 10th, at Prince's-avenue, West Kirby, Cheshire, suddenly, Chauncy Puzey, F.R.C.S., formerly of Rodney-street, Liverpool.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

HEINEMANN, WILLIAM, London.
 The Influence of Joy. By George Van Ness Dearborn. Price 5s. net.
 HOKBER, PAUL B., New York.
 Immunisation against Tuberculosis. By Karl von Ruck, M.D., and Silvio von Ruck, M.D.
 LAURIE, T. WERNER, London.
 Old Glass and How to Collect It. By J. Sydney Lewis. Price 15s. net.
 The German Woman and Her Master. By H. de Halse and C. Sheridan Jones. Price 2s. net.
 MACMILLAN COMPANY, THE, London and Canada.
 A System for Case-taking, with Explanatory Notes. By G. W. Ross, M.A., M.B. Toronto, M.R.C.S. Eng., L.R.C.P. Lond. Price 2s. net.
 MASSON ET CIE., Paris.
 Sémiologie des Lésions nerveuses périphériques par Blessures de Guerre. Par J. Tinel, Ancien chef de Clinique et de Laboratoire de la Salpêtrière, Chef du Centre neurologique de la 1^{re} Région. Avec une Préface du Professeur Dejerine. Price 12 fr. 50.
 SCIENTIFIC PRESS, THE, Limited, London.
 Clinical Notes for Probationers. By Félise Norton. Price 1s. net.
 WILEY, JOHN, AND SONS, New York. CHAPMAN AND HALL, London.
 A Method for the Identification of Pure Organic Compounds, based on Chemical Properties and Chemical Reactions. By S. P. Maitken, Ph.D. Vol. II. Price 21s. net.
 Analytical Chemistry, based on the German Text of F. P. Tredwell. Translated and revised by W. T. Hall, S.B. Vol. I. Qualitative Analysis. Fourth English edition. Price 12s. 6d. net.

Notes, Short Comments, and Answers to Correspondents.

HOSPITALS AND DISPENSARIES IN HONG-KONG.

THE Hon. Claud Severn, Colonial Secretary, in his report on the Blue-book of Hong-Kong for 1915, states that the estimated total population of the Colony, including the New Territories, is now 509,160. During the year 3085 in-patients and 14,499 out-patients were treated at the Civilian Hospital. In the Victoria Hospital for Women and Children at the Peak, 158 patients came under treatment. At the Kennedy Town Infectious Diseases Hospital 5 cases were treated, all being small-pox. At the Tung Wa Hospital, in which only Chinese are treated, there are 323 beds, and 4796 patients were accommodated during 1915, and at the branch hospital for small-pox cases (also Chinese only) 7 patients were admitted. The Alice Memorial and Affiliated Hospitals are managed and controlled by the missionaries resident in Hong-Kong, agents of the London Missionary Society, and consist of the Alice Memorial Hospital (opened in 1887), the Nethersole Hospital (opened in 1895), the Maternity Hospital (opened in 1904), and the Ho Miu Ling Hospital (opened in 1906). The total number of in-patients in 1915 was 1059, and the number of labours in the Maternity Hospital was 428. The new Kwong Wa Hospital for Chinese in the Kowloon Peninsula contains 70 beds, and 1904 patients were accommodated during 1915. One of the most important institutions in the colony not supported by Government funds is the Matilda Hospital, which stands on a commanding site of nearly three acres at Mount Kellet in the Hill District. It consists of a main building containing six wards with 26 beds, quarters for four nurses, a house for the medical officer in charge, and an operation block. A maternity ward, connected by a covered way, is in course of erection. The total cost of the buildings and their equipment has been more than \$600,000. The hospital was erected in pursuance of the directions of the late Mr. Granville Sharp, who died in 1899, and who by his will left upwards of \$2,000,000 in trust "for the erection and maintenance of a hospital at Mount Kellet to the glory of God and the good of men, in loving memory of his sainted wife, Matilda Lineolne." The objects of the testator are thus defined: "(a) To provide, carry on, and maintain a hospital for the benefit of patients primarily who are poor, helpless, and forsaken, and to provide gratuitous medical relief to any such persons suffering from disease or ill-health. (b) The hospital shall be considered to be established as a religious and evangelistic institution. (c) The hospital is reserved for British, American, and European patients."

Nine Chinese public dispensaries are maintained by voluntary subscriptions to provide the Chinese with the services of doctors whose certificates will be accepted by the registrar of deaths, and with the services of interpreters who can assist the inmates of houses where cases of infectious disease have occurred. Coolies are engaged and ambulances and closed vans provided in order to remove cases of infectious disease to the infectious diseases hospital and dead bodies to the mortuary. The dispensaries receive sick infants and send them to one or other of the convents, and arrange for the burial of dead infants. Free advice and medicine are given and patients are attended at their houses.

BENTLEY AND TRIMEN'S "MEDICINAL PLANTS."

To the Editor of THE LANCET.

SIR,—In the British Pharmacopœia, 1898, the medicinal plants are frequently referred to: Bent. and Trim. Med. Pl., Vol. —, Plate —. Please give me full names of the authors and where I might be able to get a complete copy.

I am, Sir, yours faithfully,

Tasmania, August 21st, 1916. J. L. KERR, M.D.

* * The abbreviations refer to the following work: Bentley (Robert) and Trimen (Henry). Medicinal Plants; being descriptions with original figures of the principal plants employed in medicine, and an account of their properties and uses. Parts 1-42 in 4 vols. 8vo. London: J. and A. Churchill. (1875-1880.) It was illustrated with coloured plates by D. Blair, and has been out of print for some years. It was sold at £11 11s.—ED. L.

SIMPLE FIRE PRECAUTIONS FOR THE BLIND.

THE British Fire Prevention Committee has just issued a poster, measuring 20 by 12 inches, with instructions to the blind in Braille what precautions to take in the event of a fire and how to prevent a fire occurring. The latter section includes references to smoking, the use of matches, celluloid, and flannelette. At the head of the poster the instructions are printed in ordinary type, with the heading

"Warning. Simple Fire Precautions for the Blind." In the Braille the word "simple" is not repeated. The omission may be intentional. Precautions are doubtless not so simple for the blind as to those who see. The notices are suitable for fixing on walls as posters, but in that case they must, of course, be placed within reach of the fingers of the blind. The total number of blind folk in the British Isles is estimated at between 30,000 and 40,000, and there are many schools, homes, workshops, and institutions for their benefit in which these posters would be of service. The committee has decided to provide the warning after receiving information from various quarters that nothing so far had been done for the blind in this regard. Their enterprise is commendable. The official title of the poster is "Free issue for the Blind, No. 29." It is to be obtained from the General Honorary Secretary, Mr. Ellis Marsland, 8, Waterloo-place, Pall Mall, London, S.W.

THE PROLIFICITY OF OPPOSITE TWINS.

To the Editor of THE LANCET.

SIR,—There is a popular and apparently widely known belief that in the case of twins of opposite sexes the girl is invariably sterile, and I should be grateful to any of your readers who can adduce evidence in disproof of this.

I am, Sir, yours faithfully,

Oct. 13th, 1916.

H. S. S.

"We have never heard of this as a supposition. As a fact, we know a lady who has a twin brother, 14 children, and 19 grandchildren.—ED. L.

SPHAGNUM MOSS.

A STRONG appeal has been issued by the authorities of the Auxiliary Hospital, Southernhay, Exeter, for sphagnum moss. It is stated that large quantities are required, and it is advised that this should be sent in before the winter rains make it difficult to gather. The secretaries, Bedford-buildings, Tavistock, Devon, add that it is the duty of every person residing near areas where sphagnum moss grows to send a liberal supply to the hospitals, and assistance is also required from people to clean and dry the moss.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Wednesday, Oct. 25th.

HISTORY OF MEDICINE (Hon. Secretaries—J. D. Rolleston, Charles Singer): at 5 P.M.

Presidential Address:

Dr. Raymond Crawford: Legends and Lore of the genesis of the Healing Art.

Thursday, Oct. 26th.

NEUROLOGY (Hon. Secretaries—H. Campbell Thomson, C. M. Hinds Howell): at 8.30 P.M.

Presidential Address:

Prof. W. D. Halliburton, F.R.S.: The Possible Functions of the Cerebro-Spinal Fluid.

Friday, Oct. 27th.

STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—A. S. Blundell Bankart, E. A. Cockayne, C. P. Lapage): at 4.30 P.M.

Cases:

- Dr. F. Parkes Weber: Case of Cerebral Diplegia with Excessive Mobility (Atony) of Joints.
- Dr. F. Langmead: A Family showing Cleido-cranio-dysostosis.
- Dr. C. E. Lakin: Case of Intra-thoracic Neoplasm.
- Dr. E. A. Cockayne: (1) Juvenile G.P.I. with Hypo-pituitarism; (2) Werdnig-Hoffmann Type of Progressive Muscular Atrophy.

EPIDEMIOLOGY AND STATE MEDICINE (Hon. Secretaries—William Butler, Major Greenwood, jun.): at 8.30 P.M.

Paper:

Capt. C. G. Moor: Work of a Sanitary Section at a Base.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY.—8.30 P.M., Mr. D. McC. Altken: Demonstration of Cases illustrating Orthopedic Principles and Methods in Military Surgery.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynaecological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipple); Gynaecological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whitting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipple); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynaecological Operations (Dr. A. E. Gilles). Clinics:—Medical Out-patients (Dr. A. J. Whitting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—4 P.M., Dr. C. Kempster: X Rays. The Tube and its Control.

THURSDAY.—6 P.M., Chesterfield Lecture:—Dr. M. Dockrell: Anomalies of Pigmentation and what they Indicate.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Oct. 18th, 1916.

| Date. | Barometer reduced to Sea Level and 32° F. | Direction of Wind. | Rate-fall. | Solar Radio in Vacuo. | Maximum Temp. Shade. | Min. Temp. | Wet Bulb. | Dry Bulb. | Remarks. |
|---------|---|--------------------|------------|-----------------------|----------------------|------------|-----------|-----------|----------|
| Oct. 12 | 30.170 | W. | 0.04 | 80 | 67 | 60 | 58 | 61 | Fine |
| " 13 | 30.170 | S.W. | 0.03 | 77 | 67 | 61 | 61 | 61 | Raining |
| " 14 | 30.050 | W. | ... | 82 | 65 | 60 | 59 | 61 | Cloudy |
| " 15 | 29.800 | W. | 0.01 | 89 | 60 | 55 | 53 | 55 | Fine |
| " 16 | 30.128 | N.W. | ... | 85 | 55 | 42 | 41 | 43 | Fine |
| " 17 | 30.086 | W. | 0.63 | 62 | 46 | 42 | 43 | 45 | Overcast |
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The Harveian Oration.

*Delivered at the Royal College of Physicians of London on
Oct. 18th, 1916.*

By SIR THOMAS BARLOW, Bt., K.C.V.O.,
M.D., F.R.S.,

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

HARVEY, THE MAN AND THE PHYSICIAN.

MR. PRESIDENT, FELLOWS OF THE COLLEGE, AND GENTLEMEN.—Once again we meet on St. Luke's Day to commemorate the benefactors of our beloved College and to carry out the injunctions of the illustrious Harvey, who was the greatest benefactor of them all.

COMMEMORATION OF BENEFACTORS.

As in duty bound, we recall to grateful remembrance the name of Linacre, our first President. He was the real founder of the College, for it was largely through his enlightened counsel that Henry VIII. was induced to confer the Charter. He was not only a pioneer in the revival of learning in this country, but he was a physician in the highest sense; he laid the foundations of the College on broad and noble lines, and, Churchman though he was, he kept it free from any ecclesiastical domination. The early meetings were held in his house in Knight-riding-street, and it seems clear that during his lifetime he presented his house to the College.

The services of John Caius to the College of Physicians come only second to his benefactions to Gonville and Caius College, Cambridge. He was elected President no less than nine times, and the "Annals" written with his own hand from 1555 to 1572 were not only invaluable as records, but helped to make and maintain the College tradition. The caduceus, which is one of the insignia of the President's office, was his gift. We commemorate Caius not only as a great scholar, but as the first teacher of anatomy in England, as a naturalist, and as one of the early writers on clinical medicine, as evidenced in his careful study of the sweating sickness.

Richard Caldwell, who was our President in 1570, must be always gratefully remembered for his endowment jointly with Lord Lumley of the Lumleian lectureship.

William Gilbert, the pioneer in the study of magnetism, justly designated the father of experimental philosophy in England and the inspirer of Galileo, was our President in 1630 and bequeathed to us his library, globes, instruments, and mineral collection.

Then comes Harvey, and I will limit myself for the present to the enumeration of his material benefactions. In 1651, when he was 73 and living in retirement, though still Lumleian lecturer, he offered to build and present to the College, then situate at Amen Corner, a library and museum. In two years' time these additions to the edifice along with a great parlour or conversation room in which the fellows could meet, were duly presented and conveyed during the presidency of Dr. Prujean. In 1656, when he resigned the Lumleian lectureship and said good-bye to the fellows, he gave his patrimonial estate at Burmarsh, on the Kentish coast near Dymchurch, to the College. The value of this estate was at that time £56 a year, and Harvey's desire was that an annual feast should be held, that an oration in commemoration of benefactors should be given, that a fee should be given to the orator, and a salary to the keeper of the library and museum, which he had already founded and furnished. Finally, in his will, having taken the precaution of securing that if any part of the building which he had already given were not completed money from his estate should be provided for its completion, he devised books and papers and his best Persia long carpet and his blue satin embroidered cushion and a pair of brass andirons, with fire shovel and tongs, for the ornament of the meeting-room which he had erected. The record of these simple gifts is precious, because it shows that the solicitude of Harvey was not only for the advancement of medical learning but for the promotion of the amenities of the College and that the meeting room should be as far as possible like a home to the fellows.

No. 4861.

Theodore Goulston, who was one of Harvey's younger contemporaries and was Censor for a time, left an endowment for a lectureship to be given to one of the four youngest fellows of the College.

Sir Theodore de Mayerne, who was another of Harvey's contemporaries, was like his fellow countryman Casaubon, an example of the fundamental tolerance and broadmindedness of the English nation. After a distinguished medical career in France he was hospitably received in this country and rose to be Court physician to James I. and Charles I. He became a fellow of our College, gained a high reputation, and bequeathed his library when he died.

We next come to Baldwin Hamey, junior. He was another of Harvey's contemporaries and, indeed, one of his most intimate friends. He was our treasurer from 1664 to 1666 and gave anatomical lectures to the College. Though a strong Royalist he had a lucrative *chénille* amongst the leading men of the Commonwealth and was our most munificent benefactor. The local habitation of this College in 1651 was Amen Court on land belonging to St. Paul's. The security of tenure was in grave peril from threatened levies on church property. With splendid foresight Hamey brought the property and presented it to the College free of all encumbrances. After the fire of 1666 the College was rebuilt in Warwick-lane and Hamey contributed to the cost of rebuilding. He decorated the Cœnaculum with rich woodwork of Spanish oak and some of this beautiful wainscoting was utilised for our Censors' room when the College was removed to its present site. Finally, Hamey followed his friend Harvey's example by settling in 1672 the estate of Ashlins at Great Osgar in Essex upon the College. There was a gracious personal note in Hamey's last gift, in that over and above a contribution to general purposes he allotted part of the annual income which would accrue to be devoted to the augmentation of Harvey's special benefactions.

The Marquis of Dorchester was one of our few honorary fellows and may also be considered to belong to Harvey's circle. He had been a devoted student of physic and anatomy and had probably gained Harvey's regard in Oxford. At all events Harvey was one of his sponsors when he was elected. He greatly enriched our library.

Dr. Croone was Censor in 1679 and was one of the original fellows of the Royal Society, of which for a time he was secretary. To him we owe our most valuable endowments. He had intended to found two lectureships, one at the College and the other at the Royal Society, and his beneficent intention was carried through by his widow, who subsequently became Lady Sadleir.

I have further to enumerate the Bradshaw, the Milroy, the FitzPatrick, the Oliver Sharpey, and the Dobell lectureships, the Murchison and Jenks scholarships, the Baly, Moxon, and Hawkins medals, the Swiney prize, and the Weber-Parkes prize and medals for the encouragement of the study of tuberculosis by Sir Hermann Weber, the Nestor of our fellows, still, I rejoice to say, in our midst, beloved and honoured by us all.

By your permission, Mr. President, I have to announce that in June last Mrs. Eliza Streatfeild, of 22, Park-street, Mayfair, acting upon the advice of our friend, Sir John Tweedy, offered a sum of money to the two Royal Colleges for the purpose of endowment of research. The offer was gratefully accepted, and the deed approved by this College at the last quarterly Comitia provides for the transfer of £10,000 $2\frac{1}{2}$ per cent. annuities into the joint names of the two Colleges as trustees to be known as the Streatfeild Research Fund, the interest to be applied to the promotion of research in medicine and surgery.

HARVEY'S EARLY STUDIES.

And now let us return to Harvey himself, the greatest of our benefactors. For we measure our indebtedness, not alone by the munificence of gifts in their money value, but by the additions made to the science and art of medicine, by the examples of devotion to the highest aims of life, and by the proofs of attachment to the best medical interests of the body politic which this College has endeavoured to safeguard and to represent. Weighed in these balances none will deny Harvey's supremacy.

I shall not trespass on your good nature by recounting in detail the oft-told tale of Harvey's life and great discovery. It may well be said that there is nothing more to be obtained

from a quarry that has been so often and so assiduously worked. If some of the points to which I ask your attention may seem of minor importance in themselves I may claim the excuse that everything which throws even a fresh glimmer on Harvey's life and character is at least worthy of consideration. We know that the young Harvey was a pupil at the King's School, Canterbury, from the age of 10 to 15, where we may well assume that he gained the foundations of that classical knowledge which stood him in such good stead throughout his life. It was there probably that he made his first acquaintance with Virgil, whose poetry fascinated him in his later life; is it possible that he may even have begun to read Aristotle, whose influence over him was greater than that of any other writer, ancient or modern?

But were there no other studies than the classics which laid hold of young Harvey in his schoolboy days? Dr. Venn, the learned President of Caius College, Cambridge, has drawn my attention to the regulations of the scholarship which Harvey obtained and which enabled him to go from King's School, Canterbury, to Caius College for six years. The scholarship was founded in 1571 by Matthew Parker, Archbishop of Canterbury, who was an intimate friend of Dr. Caius, and it is not unlikely that Caius influenced Parker in framing the conditions under which it was given. The most interesting of these is the enactment that at the University the scholar shall be educated first in subjects that pertain to or are serviceable to medicine and then in subjects which actually constitute medicine itself.

Such a regulation for a medical scholarship is very remarkable and Dr. Venn considers unique at that time. But let us consider for a moment its bearing upon Harvey and his predilections. It is not unreasonable to assume that he had already determined to become a doctor. Are we justified in any further speculations? We know that throughout his later life Harvey was not only devoted to comparative anatomy but that he was a keen naturalist. In Harvey's *Prelectiones* Dr. Norman Moore points out that there are references to the anatomy of no less than 80 animals. His book on generation is a perfect mine of observations on natural history. In his continental travel with the Duke of Lennox he complains bitterly that there was scarcely a dog, crow, kite, raven, or any bird or anything to anatomise; and when he was travelling with Lord Arundel in Germany, on the testimony of Hollar the artist, he made frequent excursions in the woods making observations on strange trees, plants, earths, and "naturalis," and caused some anxiety to Lord Arundel lest he should be waylaid or murdered.

This intense lifelong devotion to natural history is usually an inborn quality, and it is by no means unlikely that in Harvey's schoolboy days it was this strong predilection that justified the authorities in nominating him to what was practically a medical scholarship.

Harvey at Cambridge.

Harvey's first term at Cambridge began in May, 1593, when, we are told, he was admitted to the scholars' table at Caius College. Dr. Caius had been gathered to his fathers 20 years before. Dr. Legge, whom he had appointed as his successor, was of Caius' way of thinking in his Roman proclivities, and there was a stormy time in the College for awhile. There is no indication that Harvey was drawn into this conflict, and it may have quieted down when he entered the College. His tutor and surety was George Estey, who seems to have been a worthy parson and was appointed Hebrew lecturer the year after Harvey's entrance, but Harvey never refers to him.

Although Caius College had a medical reputation, we find rather meagre evidence of systematic instruction in medical subjects, and this in spite of Dr. Caius having laid down certain definite plans for its maintenance. He had obtained a licence for the dissection of two bodies annually in the winter and for their decent burial. The church registers give evidence that bodies, chiefly of prisoners, were dissected. Demonstrations were given.

Dr. Venn, by reference to the *Exiit Book* and the *Computus Book* of the College, which give detailed entries of the students' absences and the charges for their commons, has furnished me with some interesting and suggestive information about Harvey's time at Cambridge. As these entries have an important bearing on the question of when Harvey left Cambridge and when he entered Padua, I bespeak your

consideration of them. It is commonly stated that Harvey took his B.A. degree in 1597 and that he left Cambridge in 1598 and entered Padua in that same year. I think you will see that that is incorrect. He entered Padua in 1600.

The *Exiit Book*, which was made up half-yearly, shows that during the first three years there were no absences. This may mean that Harvey did not leave the College at all during this period or for such brief intervals as did not involve any deduction from the stipend of his scholarship. We have to remember that one month's absence for holiday was allowed by statute, and that could be taken at any time. The *Computus*, or account book, is consistent, for it shows that Harvey's stipend from his scholarship was very nearly sufficient to pay the cost of his commons. But from 1596 to 1599 the *Exiit Book* shows repeated absences.

It is clear, then, that from those dates Harvey was away from College not less than sixteen months. Some of his absences were of two months' duration or more, and some of them a few days up to a fortnight, and from his own letter in Michaelmas, 1599, he evidently required at times a long period for convalescence. The accounts show that he only received a stipend for one quarter between Michaelmas, 1599, and Lady Day, 1600—so that his scholarship lapsed at Christmas, 1599. We know that, like Sydenham, Harvey suffered at various times severely from gout. He complained very little of his ailments and somewhere speaks of the help which his pathological and anatomical investigations gave him by rousing his keen interest and making him forget his pains. I suggest that the absences during the last half of Harvey's time at Cambridge were probably due to attacks of gout.

Harvey took his Arts degree in 1597, but there are no details obtainable concerning it, nor about his work at Cambridge after he had taken his degree. It is significant that there are no references in Harvey's works to his Cambridge life. His poor health and the limited facilities for anatomical study may have left this period as one which he would gladly pass by.

There is a categorical statement in Aubrey's memoirs that Harvey bequeathed the house in which he was born in Folkestone to Caius College, Cambridge, in spite of the protest of his brother Eliab. This has been quoted again and again, but, like many of Aubrey's statements, it is untrue. Harvey bequeathed nothing to Caius College.

Entry at Padua University.

We may take it, then, that following in the footsteps of Linacre and Caius and of other fellows of this College, Harvey went in the year 1600 to Padua and not in 1598. Now it is interesting to mention that an examination of the archives of Padua, made by the University authorities at Mr. D'Arcy Power's request, has failed to reveal any mention of Harvey before 1600. To quote from Mr. Power's admirable life of Harvey, there are entries which show that at the usual time of election—that is to say, on August 1st in the years 1600, 1601, and 1602—he was elected a member of the Council of the English nation in the Jurist University of Padua. This I take to have been a sort of students' association.

Those of you who have been to Padua will remember in the University courtyard the host of memorial tablets giving the arms and name and the nationality of centuries of alumni. Two in the lower cloister are alleged to pertain to Harvey. One of them is decayed and the inscription erased, but the other is well preserved, is undoubted, and gives 1600 as the date. This agrees with the data which I have given already.

The two most interesting things at the University of Padua are the great cathedra or wooden pulpit from which Galileo addressed his class in Harvey's time, and the anatomical theatre where Fabricius demonstrated his dissections to Harvey and his fellow-students. They are not far apart. There is a capital picture of the anatomical theatre in the charming book on Harvey written by Dr. Curtis of Columbia University and published last year. Dr. Curtis points out that the tiers are really standing-places with rails in front to lean upon, which arise at a very steep angle from the central pit. The arrangement now in vogue, in fact, more resembles that in our hospitals in which students stand and look down at the operations or at post-mortem demonstrations than an ordinary anatomical lecture theatre. Dr. Curtis makes the suggestive remark that "the place looks fit to have been a nursery of object teachers, for it is too small to hold a

pompous cathedra, and the veteran to whose Latin the young Englishman listened must have stood directly beside the dead body."

INTELLECTUAL ATMOSPHERE OF EUROPE IN 1600.

And now, before we follow Harvey's further career, let us pause for a moment to consider the intellectual atmosphere of Europe when he began his course at Padua. There had been the great revival of classical learning, followed not only by the Reformation and the consolidation of the Protestant States, but by the counter Reformation in the old Catholic countries. And there was a great ferment of free inquiry on philosophy, on the principles of government, on the polity of nations, the rights of the humbler folk and the conduct of life. The creation and the dissemination also of our greatest literature was then in progress in our own country.

England in spite of its insularity always, I believe, the most tolerant and open-minded of European countries, welcomed to permanent posts many learned men from other lands. Continental travel attracted many of our countrymen, and English scholars sought illumination in those days far more in Italy than in Germany or even in France.

It concerns us most of all to ask what branch of natural science chiefly attracted educated men. I have already referred to our president, William Gilbert, and his influence on Galileo. Galileo had been lecturing six years at Padua before Harvey went there. But we must bear in mind that though he had many ardent disciples both in Padua and Florence, yet he had to encounter formidable opposition as well as persecution, and both his discoveries and his doctrines were a long time in gaining acceptance. Harvey himself seems always somewhat timid about the findings of astronomy, and regards them as unprovable. Astrology was still widely accepted. Robert Boyle was not born till 1627 and the work of Torricelli and of Pascal was yet to come. The Royal Society held a few informal meetings in 1645, but did not receive its charter till 1662.

Thus, although at the end of Harvey's life physics had made great advances, at the time of which we now speak—viz., 1600—it was by no means a popular science. The chemistry of that time was dominated by unverifiable hypotheses, and it is quite what we should have expected that Harvey, according to Aubrey's statement, undervalued its exponents and spoke against it; it was much too vague and nebulous to suit Harvey.

We have, then, to turn from the physical to the biological sciences. The subject which not only engaged the energies of some of the greatest men of that generation, but also attracted extensively the interest of educated people, was human anatomy. Italy was the Mecca of anatomical students. At Padua itself there was a great tradition, for Vesalius, Fallopius, and Fabricius formed a brilliant succession of teachers. Dr. Caius, as we know, had not only studied with Vesalius, but had lived in the same house with him.

The Study of Human Anatomy.

But with regard to human anatomy as a subject of interest amongst educated people, let me read you a sentence or two from Evelyn's Diary, though they relate to a time a little later than this particular date. During the troublous years immediately preceding the Commonwealth, Evelyn travelled on the continent. Whilst at Padua he took out a short course of anatomy and physic. During a month he tells us that he saw a man, a woman, and a child dissected by Veslingius, the anatomical professor, with all the manual operations of the surgeon on the human body. He also purchased from Veslingius's assistant some rare tables of veins and nerves, and gave orders for a third to be prepared of the lungs, liver, and nervi sexti par and the gastric veins, which he sent to England and ultimately presented to the Royal Society. But before that presentation was actually made we find that Sir Charles Scarborough, who succeeded Harvey as Lumleian lecturer, induced Evelyn to lend them for a time to our College for his own lectures. Scarborough had been unable to induce Evelyn to present them to our College. They were given by the Royal Society to the British Museum and by the British Museum to the Hunterian Collection, and are now in the Royal College of Surgeons Museum. These tables are similar to those six preparations which were given to this College in 1823 by the Earl of Winchelsea. They were said to have been inherited from Harvey and to

have been used by Harvey at his lectures. That, I think, is more than doubtful.¹

Thomas Hobbes, the philosopher, dissected in Paris along with his friend the many-sided physician William Petty, and at a later period Robert Boyle also dissected in Ireland under the same friendly guidance. Descartes studied human anatomy, dissected many brains, and repeated Harvey's experiments on the circulation for himself. The Port Royalists, following Descartes' lead, repeated many vivisection experiments on the circulation.

Fra Paolo Sarpi, the ecclesiastical statesman and adviser of the Venetian Republic, seems to have found time and opportunity to study anatomy to considerable purpose and even to make observations on the valves in veins. He was probably in touch with Fabricius, and we know that Padua partly depended on Venice for some of its anatomical material. Charles I. took the greatest interest in anatomy and in the numerous demonstrations, not only on the circulation of the blood, but on embryology, which Harvey gave him from time to time.

But it is important to note that although the great Italian anatomists had made enormous strides in the study of structure, their knowledge of function was lamentably small—in other words, physiology had not kept pace with anatomy. It has, indeed, been affirmed that physiology had not advanced since the time of Galen, and doubtless its inadequate progress was partly the consequence of the prevailing ignorance of physics and chemistry. But in the evolution of knowledge and of method the disproportionate study of human anatomy on its structural side must be credited with the development of observation, and so far it was a big step in the long and bitter struggle against the trammels of authority.

HARVEY AS PUPIL OF FABRICIUS.

That was the beginning of a momentous epoch in the history of human knowledge when on St. Luke's Day, 1600, a young Englishman, aged 22 years, rather under the average height, with raven hair, dark piercing eyes, rather sallow complexion, and with a keen, restless demeanour and rapid speech, enrolled himself amongst the pupils of the learned, laborious, and generous Fabricius. What was Harvey's exact attainment at this time in the details of anatomy and the technique of dissection we have no means of knowing. But we have reason to believe that even then he was by no means ill equipped with ancient learning; we know that he was a keen and accurate observer and an enthusiastic naturalist, and that he had a mind reflective as to the causes and relations of things, fertile in recognising resemblances and above all ready in making working hypotheses and in devising experiments which would more or less verify those hypotheses. It was in these latter qualities that Harvey's supremacy over his teachers and predecessors ultimately became so manifest. The addition of experiment to observation was vital and far-reaching. The exact relationship between teacher and pupil we do not know, but it must have been very intimate, as proved by all Harvey's references to Fabricius, not only in respect to the organs of circulation but also in respect to his observations and speculations on generation. These references are not merely respectful but reverent.

From the time when Vesalius described the valves of the heart the Italian anatomists had been keenly exercised on the valves in various parts of the vascular system, and Fabricius's discovery of the valves of the veins was as far back as 1574. But the scientific use of the imagination seems to have been dormant with these clever observers, and they were singularly inept in explaining the mechanism of the valves. Sir William Osler suggests that it was reflection on the mechanism of the valves of the veins which, at this early period of his career, set Harvey on the right tack in his great discovery, and there is a remark of Harvey's friend, Robert Boyle, which is not inconsistent with that suggestion. Boyle says that Harvey's observations on "contrivances similar to the valves, used in hydraulic engines for preventing counter-currents, led to his

¹ I suggest for consideration whether these tables may have come into the Winchelsea family not through Harvey but possibly through Sir John Finch (the son of Sir Heneage Finch), who was M.D. of Padua, and not only English Consul there, but Syndic of the University. He was admitted an extraordinary fellow of our College in 1660, and seems to have had for an anatomical pupil one Marchetti, who made "tables of veins, nerves and arteries five times more exact than are described in any author." Vide Dr. Edward Browne's letter to Sir Thomas Browne. Sir Thomas Browne's Works, vol. i., p. 91.

discovery of the circulation of the blood." Whether Boyle's remark refers to the period of study at Padua or not it is certain from the terms of his diploma in our possession that Harvey enormously impressed his teachers and examiners with his knowledge and ability.

HARVEY AS PHYSICIAN.

Harvey returned home in 1602 and after his incorporation as Doctor of Medicine at Cambridge he came to our College and submitted himself to examination as a "candidate," which title in those days I take to have been equivalent to our present designation of member. Dr. Norman Moore has found by consulting the "Annals" that Harvey was examined no less than four separate times between May, 1603, and August 4th, 1604, although he satisfied his examiners on each occasion. Moreover, of his contemporary candidates he was the last to be elected to the fellowship—viz., on May 16th, 1607—he being then 29. Whether in that early period of his connexion with this College he had any opponents we have no other means of ascertaining, but he seems to have had the support of the President, Dr. Atkins, when he applied for the post equivalent to what we should now call assistant physician at St. Bartholomew's Hospital, and especially that of Dr. Wilkinson, whom he assisted and after his death succeeded.

In the literature about Harvey there is nothing more interesting than Sir James Paget's Records drawn from the Annals of St. Bartholomew's Hospital. The relations between the Governors and Harvey are altogether honourable and creditable to both sides. I will only refer to the revised hospital regulations which were submitted by Harvey in 1633 and adopted. These rules show that in general medical policy Harvey was a strong conservative, and that he stoutly maintained the then existing supremacy of physicians over surgeons. The surgeon was not only obliged to consult the physician in all difficult cases and whenever inward physic was required, but he was not to be allowed to perform any major operation without the approbation and the direction of the physician. The surgeon was not only forbidden to give inward physic, but was required to declare to the physician what external remedies he applied in any given case. The surgeon had to attend the physician in his weekly consultations in the great hall to which the patients were brought, and where both matron and apothecary attended. In those days the surgeons had to visit their patients in the wards, and the physician, as a rule, only went to the wards when his patients could not be brought to the hall where most of the medical work was done.

During the 36 years, with certain intervals, that Harvey was connected with St. Bartholomew's Hospital he must have seen a great deal of disease amongst the London poor. But his post of Court physician, first to James I. and subsequently to Charles I., led to his having a considerable *clientèle* amongst the well-to-do. We know that some of the most eminent men of the time were his patients. Aubrey disparages his "therapeutic way," and maintains that although he was a great anatomist he was not much of a physician, and that after his great discovery was fully announced his practice waned.

Aubrey is a very inaccurate person, but this statement may have some truth in it. It is interesting to realise that the philistine is the same in every generation in his estimates of the merits of medical practitioners as in other estimates. If a doctor proves his greatness by some purely scientific discovery which has no immediate practical application, if he distinguishes himself in literature or art, the philistine shrugs his shoulders and says that is all very well, but that such a man should be a good practitioner is impossible. Let us, then, consider some of the evidences derived from Harvey's writings bearing on the subject of his clinical experience.

Clinical Illustrations from Harvey's Writings.

In his first disquisition to Riolanus Harvey refers to his unpublished MS. on Medical Anatomy or Anatomy in its relation to Medicine. This MS., then in Harvey's possession, has, alas! been lost, but it may yet be found. But his own references to this MS. are very relevant to our inquiry. In alluding to its contents Harvey says he—

desires to relate from the many dissections of the bodies of persons diseased, worn out by serious and strange affections, how and in what way the internal organs were

changed in their situation, size, structure, figure, consistency and other sensible qualities from their natural forms and appearances and in what various and remarkable ways they were affected.

I quote this long sentence because it embodies Harvey's ideal of the morbid anatomist and shows that he belonged to the true faith—viz., that the best physicians are first of all good morbid anatomists.

In this letter his illustrations are, as might be expected, chiefly drawn from the diseases of the circulatory system; he gives interesting references to aneurysms, apoplexies, and calcified arteries. In more than one place he refers to the small radial pulse on the distal side of an aneurysm of the neck. He recognised that empyema might ulcerate into the lungs and discharge through the bronchi.

In his work on generation, which contains many clinical illustrations, there is a careful analytical description of the case of Lord Montgomery's son, who had an exposed heart left bare after a severe suppurating injury to the chest, and his report of the post-mortem examination of Thomas Parr is a sample of the thorough way in which he made his autopsies.

In his second letter to Riolanus he shows how wide was his acquaintance with local disturbances of circulation which he had discussed at length in the lost Medical Observations. There was one disease which was common in his contemporaries and of which he had abundant experience in his own person—viz., gout. Whether he was permanently crippled is, I think, doubtful, but that he suffered severe pain, especially in his lower limbs, is quite certain. Heberden sneers at the methods which Harvey adopted to relieve what we may probably regard as attacks of localised gouty hyperæmia. But Harvey's plan of plunging his feet into a pail of cold water seems to have been justified by the results, and Heberden has the candour to admit that he lived till 80, and does not appear to have died from gout but from old age. This mode of treatment shows not only Harvey's courage, but his independence of conventional dogmas. In our own times we have learnt that the local application of cold in febrile and hyperæmic states is not the dangerous thing it was once supposed to be.

In Harvey's *Prelectiones* there are many clinical observations introduced by way of illustration. In his valuable introduction Dr. Norman Moore points out that Harvey was "familiar with scarlatinal desquamation; he had noted the enlarged liver in those who died after long suppuration and the shrunken liver in cirrhosis. The varying appearances of gall-stones and the common shape of large renal calculi were well known to him, and he describes pericarditis and its symptoms from his own observation."

It is quite true that Harvey says very little about drugs in any of his memoirs. That is not exceptional in physicians who are distinguished as morbid anatomists. One would like to believe that when the apothecaries of the time disparaged his "bills" (as prescriptions were then called), they may have been too short and too simple to please the apothecaries. There is a nice report on the case of Prince Maurice when Harvey was with the King at Oxford, in which it is stated about Harvey and his colleague Edmund Smith that the "doctors doe resolve to give very little physic, only a regular dyett and cordyall antidotes." It is significantly added that Prince Maurice did well.

But I think I have noticed occasionally that when a morbid anatomist ventures into the realm of therapeutics he may show an immense confidence in some particular preparation, and it is not altogether an exceptional incident that in a letter to his friend Hamey which we possess, concerning the ailment of a poor woman in whom they were both interested, Harvey extolled the therapeutic value of the heel-bone of the deer. Perhaps he had found it a useful way of administering phosphate of lime. But whether he gave many drugs or few, Harvey had confidence in the relief or removal of pain by "the detraction of blood, the application of cupping glasses, or the compression of an artery which leads to a part." He also used cupping glasses for the relief of asthma.

In his work on generation Harvey shows practical acquaintance with both midwifery and gynecology. He recognised the dangers of retained secretions in the body of the uterus, and showed courage and decision in dilating the cervix and in some cases in the employment of intra-uterine injections. He had carefully studied cancer of the uterus. I commend to my gynecological brethren a remark which

shows Harvey's shrewdness. Speaking of certain uterine troubles he says:—

Women are peculiarly liable to these accidents, especially those among them who lead a luxurious life or whose health is naturally weak or who easily fall into disorders. Country-women and those accustomed to a life of labour do not become dangerously ill on such small grounds.

But Harvey was not unacquainted with the surgery of his day. In this same mine of clinical experience, the work on generation, will be found reference to cases of large sarcoceles, the treatment of which he had initiated by tying the afferent artery so as to limit the blood-supply. He subsequently removed the tumour by extirpation with the knife or the searing-iron.

Perhaps Harvey's conservatism as regards the relative status in his time of physicians and surgeons and his daring to have an independent opinion on surgical cases and even performing some operations (for in his will you will remember he left his surgical instruments to his friend Scarborough) may have roused the antipathy of the Barbers' and Surgeons' Company. At all events, they endeavoured to convict him of ill-practice in the case of an alleged fracture of the skull. There was no allegation of operation on his part, but only of erroneous opinion. But I do not gather that the Barbers' and Surgeons' Company supported their condemnation by any post-mortem evidence.

I think we may rest content that our Harvey, who was universally admitted to be a great anatomist and naturalist, was also an experienced pathologist, a learned physician, and he had the qualifications of a good all-round practitioner.

HARVEY AS COURT PHYSICIAN: CONTINENTAL JOURNEYS.

Harvey's Court duties were by no means strictly limited to medicine. As physician to the Court he was instructed to take two long and important continental journeys. The first of these was in 1630, when he accompanied the young Duke of Lennox on a rather prolonged tour, in which he was obliged to dodge the plague on several occasions, and was greatly impressed with the impoverishment of the countries through which they travelled.

The second continental journey made at the Royal Command was in 1636, when Harvey accompanied Thomas, Earl of Arundel, the Lord High Marshal, on an embassy to Vienna and Ratisbon, which was mainly concerned with efforts to secure the restoration of the King's nephew, the young Prince Palatine, to his proper status. About three years ago I had the good fortune to secure for this College 11 of Harvey's letters referring to a painful episode of this particular journey. Harvey's writing is very hard to read. It is the writing of a man of terse expression and who had no time to waste. The contractions are appalling. These letters are not quite so difficult as the few others which are extant, and they show that when he took pains he could make a tolerable script as well as express himself forcibly. They were written to Harvey's friend, Basil Lord Feilding, the eldest son of Lord Denbigh. Feilding was English ambassador at Venice, and it would appear had invited Harvey to visit him. Harvey looked forward to this visit with great delight.

Account of Second Continental Journey.

There exist in the Clarendon State papers fairly complete reports of this embassy on the official side, forwarded by Lord Arundel and his staff. It may interest you to follow Harvey's steps on this journey. Lord Arundel's reports are addressed to Sir Francis Windebank, one of the Secretaries of State for Foreign Affairs. The first is from Utrecht, in which Arundel informs Windebank that he has left his son at Leyden suffering from a stomach attack, but under the care of Dr. Harvey. They soon rejoined the party and we next hear from Arundel at Cologne, where he says he has been "this evening at the Jesuits fair new church and College where they used me with all civility. I found in the College little Dr. Harvey who means to convert them."

I think it is more than likely that this polemic related not to theology but to Harvey's doctrine on the circulation, for at the next stage, Nuremberg, Harvey writes a very courteous letter to Dr. Hoffmann in which he tries to disabuse his mind of certain misconceptions, and offers to give him a demonstration of the circulation. This letter is included in Harvey's published works, and shows that along with his scrupulous courtesy he could usefully blend a little

elegant sarcasm, for he begs Hoffmann, if he won't come to a demonstration or investigate by his own dissection, that he will not vilipend the industry of others nor charge it to them as a crime. "Do not derogate," he says, "from the faith of an honest man not altogether foolish nor insane who has had experience in such matters for a long series of years."

The first and second of Harvey's letters to Lord Feilding relating to this journey (now in the possession of the College) were written from Lintz, to which the Ambassador's party had gone on leaving Nuremberg. Here the first meeting with the Emperor Ferdinand took place. Harvey says he accompanied the Emperor on some hunting excursions. He speaks of him as a pious, good man, desirous of all love, quietness, peace, and justice! He refers to the impoverishment of the country by the Thirty Years' War and to the licence and oppression and anarchy which prevailed in Germany. Nevertheless, they had joined in a feast given by the Count of Milan, "the chief major-domo of his Majesty, where they drunk hard and had many expressions and many good wishes." There are ominous references to the plague and the fear of it.

The next move is to Vienna, where Harvey sees the Queen of Hungary and praises her two fine little babies. Then they go to Ratisbon where they have to await the assemblage of the Diet of the German Empire, which somewhat shadowy and dilatory body will have to discuss the questions respecting the young Prince Palatine's claims. From the Clarendon State papers we learn that everybody in Lord Arundel's mission was excessively tired by the long delay. Harvey seems to have been terribly bored and to have besought Lord Arundel to let him go to Italy during the vacancy, as he styles the waiting time. In one of the Clarendon despatches there is a reference to honest little Harvey whom the Earl is sending to Italy about some pictures for His Majesty.

This opens up a very interesting little bypath upon which other correspondence of Lord Feilding's throws additional light. Lord Arundel, as we know, was one of the great English virtuosos of that day and was the first to collect objects of art from Italy and elsewhere. His name is chiefly associated with the collection of Greek and Roman marbles which was ultimately secured for the University of Oxford by the mediatory efforts of John Evelyn. But he was a collector of pictures also. In some of the Feilding letters there are references to the pictures which at various times Feilding acquired for the King's collection, and the Marquis of Hamilton writes to Feilding on the same subject in which he delicately hints that Lord Arundel might take the opportunity of feathering his own nest and that he might even forestall Feilding in some of his bargains.

Detention in Lazaretto at Treviso.

At all events the invitation to Harvey to visit Lord Feilding at Venice may well have led to the extemporised mission which was entrusted to Harvey by Lord Arundel. But poor Harvey little dreamed of what was in store for him. He doubtless left Ratisbon in high spirits at his escape from the weary diplomatic tedium so trying to his active spirit. He was armed with *visé* to his passport and commendatory letters, but when having crossed the boundary of the Venetian territory he arrived at Treviso he writes to Lord Feilding that he was unjustly affronted, being stayed and commanded by the podesta to go into the lazaretto without any cause or suspicion alleged. It is clear that they were terribly and perhaps unreasonably afraid of the plague. Harvey produced his *visé* passport and recommendations from the King of Great Britain, from the Emperor, and from Lord Arundel, but the podesta would not look at them. Harvey refused to go to the lazaretto for fear of the infected persons who had been sent there before, and he ultimately elected to stay in the open fields. He scribbles his letter on the grass in the field and begs Lord Feilding to procure his release with all expedition.

He seems to have subsequently arranged to sleep in a poor open garden-house and to lie upon straw, but was by force and threatening of muskets compelled to go into the lazaretto into a very nasty room where the vetturin and his two servants and saddles lay!

The podesta, probably as the result of Lord Feilding's complaint, in three days' time sent a coach offering to take Harvey back to the poor garden-house (where he had been

before). Harvey did not conceal his irritation and indignantly refused to accept anything whatever from the town authorities, least of all a bed which he believed would have been an infected one, so he elects to sleep on straw. Subsequently the Senate of Venice sent him a message that he must stay where he was till further orders, without specifying the time. Meanwhile poor Harvey, having bad food and great exposure, had contracted sciatica. He seems to have been kept between a fortnight and three weeks, but we do not know the exact date or method of his release. He sent on his letters to Lord Feilding, and though he did not stay long in Venice he seems to have had a good time there, and then he went to Florence, where he enjoyed the hospitality of the Grand Duke, who lavished everything upon him that heart could wish.

Harvey's last letter to Lord Feilding was to announce his return to Ratisbon in November so as to be ready to accompany Lord Arundel on his return to England, his mission having turned out rather a fiasco.

It has hitherto escaped notice, but I find in the Clarendon Papers a letter from Sir John Borough in which it is stated that they were aware at Ratisbon that Dr. Harvey had been kept in quarantine at Treviso, "being not as yet, for aught we hear, released." His return to Ratisbon may have been somewhat surprising. A perusal of Harvey's letters and of the State Papers gives us a poor opinion of the estimation in which Englishmen were held in Charles the First's time in foreign lands, and we may be sure that Cromwell would not have brooked such scant consideration to any English subject during his rule.

Between the time of Harvey's leaving Florence and going back to Ratisbon we must, I think, intercalate his visit to Rome, where, under the hospitable roof of the English College, he dined with one who became a very staunch friend. This was Dr. Ent, who, in the evening of Harvey's life, secured for publication his work on Generation. The alleged visit to Rome with Dr. Ent, which Aubrey mentions, has been shown by Dr. Munk to be one of his many inaccuracies. The joint visit was the one just mentioned; it was in October, 1636. Harvey was back in London at the end of the year. He doubtless made other visits to Italy and probably to Padua.

THE CIVIL WAR: HARVEY AT OXFORD.

As Court physician Harvey accompanied the King for his Scotch Coronation. It is eminently characteristic that the chief interest for Harvey was not the ceremony nor the theological disputes, but his own visit to the Bass Rock in order to find out some points with regard to the Solan goose which then, as now, congregated on that island in great numbers. He probably also accompanied the King in his abortive warlike journey to Berwick in 1639 and perhaps again in 1640, but there do not appear to have been any important questions of natural history to be solved in those journeys, and I find no reference to them in Harvey's papers. The clouds were gathering for the Civil War, and Harvey's official association with the King rendered him *persona ingrata* not only to the Parliamentarians in the House of Commons, who tried to oust him from St. Bartholomew's Hospital, but to a mob who sacked and plundered his official lodgings in Whitehall. It is somewhat piquant and characteristic that Harvey, referring to this outrage, says the cause of his sorrow is that

"certain rapacious hands stripped not only my house of its furniture, but what is a subject of far greater regret with me, my enemies abstracted from my museum the fruits of many years of toil." "Whence it has come to pass that many observations, particularly on the generation of insects, have perished with detriment, I venture to say, to the republic of letters."

It has been assumed that Harvey's "Medical Observations," as well as some other papers, were destroyed by this mob. But Sir George Paget has drawn attention to the fact that Harvey himself speaks of these same "Medical Observations" being in his possession at the time when he writes, many years afterwards, his first letter to Riolaunus.

In regard to the historic incident of Harvey looking after the two young princes at the fringe of the battlefield of Edgehill, it is interesting to remember that his friend Lord Feilding had been removed from his Ambassador's post at Venice and was fighting on the Parliamentary side, whilst the Earl of Denbigh (Lord Feilding's father) was fighting for the King. There must have been many of Harvey's friends

on both sides of the great struggle, but it is noteworthy that throughout the four years, from 1642 to 1646, that Harvey was with the King at Oxford, there is no evidence that he took any part in political affairs, and there is no report of any utterance of greater resentment than is expressed in the one just quoted concerning his natural history collection.

Nothing daunted by the limitations of his surroundings at Oxford, he goes to visit his friend Bathurst at Trinity College and conducts with him daily observations on the development of the hen's egg. He was incorporated a Doctor of Medicine of Oxford, and during the last year was appointed Warden of Merton College. His brief opening address to the fellows, appealing to them to cultivate harmonious friendship amongst themselves and pledging himself for the development of the welfare of the College, is quite in harmony with Harvey's subsequent utterances at the College of Physicians. One interesting experience at Merton was his welcome to Scarborough, who had been expelled from his fellowship at Harvey's old college in Cambridge on account of his Royalist principles. Scarborough seems to have been not unnaturally interested in the lively military expeditions around Oxford of Prince Rupert and his fellow officers. Harvey said to him, "Prithee, leave off thy gunning and stay here and I will bring thee to practice." He probably recognised Scarborough's mathematical abilities and foresaw a great future for him, and Scarborough is said to have helped Harvey in some of his investigations.

In Clarendon's "History of the Rebellion" some of the most attractive pages are the character sketches of the chief men on both sides, and it is significant that Harvey finds no place; indeed, there is not a single mention of him in the whole of the work. Clarendon seems not to have concerned himself in writing his History with a single person who took no active political or military part in the great struggle. It seems remarkable in view of Harvey's long personal devotion to Charles I. in prosperous as well as in adverse days that when the surrender came he left him, and it is doubtful if he ever saw him again. But in fairness we must remember that Charles's movements, after the surrender, up and down the country were not under his own control, and very shortly the access of particular adherents and attendants was regulated, and Harvey may not have been permitted to join him, even if it were desired. At all events, he retired a saddened man of 68 to the quiet and rest provided him by his relatives in London and its neighbourhood, and his rich and influential merchant brothers may well have secured him safety and protection in his retirement.

HARVEY'S GREAT DISCOVERY.

I can well believe that a friendly critic might say, You have brought this discursive review of Harvey's career to its last stage and have said very little about his great discovery. To which I reply, That great discovery is inextricably linked with Harvey's long period of association with the College of Physicians, and to some points in that long period I now ask your attention.

It is probable that from 1602 onwards Harvey was working at his subject, and from 1609, when he was formally elected physician to St. Bartholomew's Hospital, he must have gradually acquired a reputation as an anatomist as well as a physician. In 1615, being then 37, he was appointed Lumleian lecturer to this College, a post which he held with certain inevitable absences until 1656, the year before he died. The Prelectiones which bear the date of 1616 are really the lecture notes for the first anatomical course which he delivered. His introduction, with its detailed categories of anatomical study, is interesting as a logical academic statement, but the practical instructions which Harvey laid down for his own guidance in method seem to me the last word as to the proper objects and limits of oral teaching and demonstration, and are a model to be utilised by every medical teacher of our own time. The special value of this MS., which deals chiefly with the viscera, is that we have here Harvey's first account of the circulation of the blood, the full exposition of which he gave in his printed book in 1628. For these 12 years Harvey had expounded his doctrines to our predecessors, and it is significant that from within this College there was no criticism or opposition to the full acceptance of those doctrines with the solitary exception of one licentiate, a certain Dr. Primrose, who was rather an abject pupil and follower of Riolaunus, the anatomical professor at Paris. Harvey demolished the

master Riolanus in the two disquisitions addressed to him, and the pupil needs no further consideration.

I need not dwell on Harvey's masterpiece, so brief, so terse, and so convincing, a model for all time of inductive reasoning. Let us never forget the two supreme doctrines which he established and which neither his predecessors nor his contemporaries had understood. (1) The circulation of blood from heart through arteries and back through the veins to the heart again. The pulmonary circulation, it is true, had been more or less apprehended, but it was reserved to Harvey to establish the true nature of the systemic circulation and to give the *coup de grâce* to the ebb and flow movement of the blood current, now this way, now that, which was the accepted explanation up to his time. (2) The muscular contraction of the ventricles, the real motive force of the circulation which had been conspicuously ignored and misinterpreted previously.

It is quite true that Harvey's view of the respiratory function was inadequate. For him it was summed up in cooling and ventilation, he never thoroughly faced the difference between arterial and venous blood, and it is doubtful if the meaning of oxidation had taken any definite shape in his scheme of life. But the day of chemistry was not yet, though it was not far off, and it was impossible for him without the help of the microscope to bridge over the space between the arteries and the veins. How he would have leapt for joy if Malpighi had only demonstrated the existence of the capillaries within Harvey's lifetime.

What was Harvey's method? It is certain that he had a wide and thorough acquaintance with the work of his predecessors, but he differs from them all in the courage and independence with which he really begins his work by ascertaining by his own senses what are the anatomical facts untrammelled by the statements of authority. He follows up his human anatomy by comparative studies of the circulatory organs of every animal that he can obtain. Then he reflects on the simplest explanation of the anatomical mechanism before him. Finally, he devises experiments, vivisectional and otherwise, to test and verify his hypotheses.

The question has been asked again and again, What was the relation between Bacon and Harvey? Bacon in his "Novum Organum," which was published in 1620, makes no reference to Harvey's discovery. Harvey's book appeared in 1628 and Bacon died in 1626, but one would have supposed that Bacon might have heard the account of Harvey's discovery during the four years which had elapsed since he first expounded it in the College. On the other hand, Sir Samuel Wilks is not, I think, correct when he says that Harvey had not read Bacon's works and owed nothing to Bacon. In the twenty-fifth exercise of Harvey's book on generation there is a sentence in which he proposes to review and analyse some of his previous results, and he says: "Wherefore I think it advisable here to state what fruits may follow our industry and in the words of the learned Lord Verulam to enter upon our second vintage."

If Aubrey is to be credited, Harvey "esteemed Bacon for his wit and style but would not allow him to be a great philosopher." "He writes philosophy like a Lord Chancellor," Harvey says, "but I have cured him." I think probably in spite of Bacon's many-sided enlightenment Harvey looked upon him as an academic litterateur who had no claims to eminence in practical investigation, and it may well be that Bacon's deep-rooted antagonism to Aristotle, which dated from the time when he was a student at the University, may have roused Harvey's distrust. "A man of genius lights his own fire," said John Foster, and in spite of all that has been said about every man's work being more or less dependent upon his environment and the heritage of the past, I do not think we are wrong in claiming that Harvey was a creative genius.

WORK ON GENERATION.

The work on generation has been spoken of as Harvey's aftermath, but in many ways it is more interesting than his *magnum opus* on the circulation, and I do not think it has received adequate appreciation from my distinguished predecessors. It tells us a great deal incidentally about the world experiences of a long and chequered career, and it shows Harvey to us on the speculative and contemplative side. The anatomical observations are, of course, circumscribed by the absence of microscopical methods, though it must be admitted that Harvey used such magnifying lenses

as he possessed to some purpose. There are some erroneous conclusions but not bad ones.

The introductions on the manner and order of acquiring knowledge and on the method of study are, I submit, masterpieces of lucid exposition. This work is interesting as showing Harvey's own estimate of his teachers.

"Foremost of all among the ancients," he says, "I follow Aristotle: among the moderns Fabricius of Aquapendente, the former as my leader the latter as my informant of the way." "For even as they who discover new lands and first set foot on foreign shores are wont to give them new names which mostly descend to posterity, so also do the discoverers of things and with perfect propriety give names to their discoveries." "And now I seem to hear Galen admonishing us that we should best agree about the things and not dispute greatly the words."

But with all Harvey's reverence for Aristotle's philosophy I believe he respected him most of all as a great naturalist and observer, and it is noteworthy that for him as well as for Fabricius and for Galen his reverence never prevented Harvey from pointing out their blunders in anatomical observation as well as in the deductions drawn therefrom. For example, in his fourteenth exercise Harvey goes so far as to suggest that on one point Aristotle had not himself seen the things he described, but received them second-hand from another observer, and that the periods were not given rightly.

HARVEY'S LATER YEARS: RELATIONS WITH THE COLLEGE OF PHYSICIANS.

As I have already indicated, from 1646 to 1657 his Court duties ended, his private practice relinquished, Harvey lived henceforward in retirement, first with one of his merchant brothers then with another in London or in the country near by. His brothers were substantial and influential people. In earlier years, when their father had left Kent and had come to live in London, Fuller tells us that—

As the sons got great estates they made their father treasurer thereof, who, being as skillful to purchase land as they to gain money, kept, employed, and improved their gainings to their great advantage; so that he survived to be the meanest of them of far greater Estate than himself.

In later years his brother Eliab looked after Harvey's money affairs, and he had no anxieties. We know little, alas, of Harvey's married life, but I think it must have been a happy one. His wife was the daughter of a cultivated and eminent physician, Dr. Launcelot Browne. They were married at the very outset of Harvey's professional career, and the wife died probably during the time Harvey was with the King at Oxford. The references in Harvey's will to his dear deceased loving wife show his solicitude to perpetuate her wishes, and his gracious desire that certain of his benefactions should be regarded as from her, though she had long since passed away, manifest his tender affection for her. It is clear that his sisters-in-law and all their respective households were unceasing in their care and solicitude, and the detailed and thoughtful remembrance in his will of all his relatives and their servants and of many poor folk is very touching. He was childless, but his care for his nephews and nieces was very marked.

This College was the chief interest of his old age. Besides being Lumleian lecturer, he had been at different periods Censor, Treasurer, Elect, and finally, when he graciously declined the proffered presidency, Councillor of the College. But the benefactions which I enumerated at the outset belong to the eventide of his life, from 1651 to 1657, and he seemed never to be able to give enough.

It is interesting to think of the devotion and long duration of his friendships. In old days he had nominated Dr. Edmund Smith as his substitute at St. Bartholomew's. Edmund Smith was with Harvey at Oxford, and now when Harvey was building at his own expense the costly and beautiful addition to the College edifice, it was Edmund Smith who really superintended the whole business for him, and whose name, at Harvey's desire, along with that of Dr. Prujean, the President, appeared on the commemoration inscription. I have referred to the brotherly attachment of Harvey, Ent, and Scarborough. Harvey's discoveries were at length warmly accepted by foreign universities and by foreign anatomists and scholars, notably by Siegel, Bartholin, and Descartes. Some of these foreign anatomists stoutly defended Harvey's doctrines against the few remaining obscurantists who were still in opposition. His friend,

Thomas Hobbes, said that Harvey was the only man whom he knew that had lived to see his own doctrine established in his lifetime.

Abraham Cowley's poetry is seldom read in these days, but his two poems on Harvey, based on intimate knowledge of the man and of his work, are full of genuine feeling and devotion. But the recognition most precious to him was the homage of this College. Fuller says of him he was not only Doctor Medicinæ but Doctor Medicorum. The homage of the College was shown during his lifetime by erecting a statue of Harvey. It was further shown by the large gathering of fellows who followed his remains beyond the City walls in the first part of his funeral. How many of them gathered round his tomb at Hempstead in Essex we do not know. The homage of his successors in this College was shown in 1883 by the reverent removal of his remains from the damaged outer vault where they lay to a sarcophagus in the chapel above.

THE WORK AND CHARACTER OF HARVEY.

Whilst we of this generation render our homage to our great benefactor, let us in a few words picture to ourselves the outstanding features of his work and character. First observe his pursuit of truth for its own sake, even though a complete solution were not forthcoming and quite independently of any ulterior benefit that might ensue. His discovery was one of those which, in Bacon's phrase, might fairly be called "light-bearing" rather than "fruit-yielding."

Amongst the objections which Harvey had again and again to combat in his work on the circulation was the ever-recurring question, *Cui bono?* Listen to his reply:—

I own I am of opinion that our first duty is to enquire whether the thing be or not, before asking wherefore it is. Meantime I would only ask how many things we admit in physiology, pathology, and therapeutics the causes of which are unknown to us? Whoever therefore sets himself in opposition to the circulation because if it be acknowledged he cannot account for a variety of medical opinions, nor in the treatment of diseases, give satisfactory reasons for the phenomena that appear or who regards it as in some sort criminal to call in question doctrines that have descended through a long succession of ages; to all of these I reply that the facts cognisable by the senses wait upon no opinions, and that the works of Nature bow to no antiquity, for, indeed, there is nothing either more ancient or of higher authority than Nature.

With what labour (he says) do we attain to the hidden things of truth when we take the averments of our senses as the guide which God has given us for attaining to a knowledge of his works, avoiding that specious path on which the eyesight is dazzled with the brilliancy of mere reasoning, and so many are led to wrong conclusions to probabilities only and too frequently to sophistical conclusions on things.

The doctrine of "spirits" dominated the physics and the physiology of that time. Harvey says—

As it is still a question what they are, how extant in the body, of what consistency, whether separate and distinct from the blood and solids or mingled with these—upon each and all of these points there are so many and such conflicting opinions that it is not wonderful that "the spirits," whose nature is thus left so wholly ambiguous, should serve as the common subterfuge of ignorance.

Persons of limited information when they are at a loss to assign a cause for anything, commonly reply that it is done by the spirits, and so they bring the spirits into play upon all occasions, even as indifferent poets are always thrusting the gods upon the stage as a means of unravelling the plot and bringing about the catastrophe.

Harvey's demolition of the doctrine of "spirits" marks an epoch in the history of science. Long sentences were the fashion of the time, but Harvey makes his meaning plain. He was keenly alive to the bondage of names and phrases. He was anxious to get the *knowledge of things* and not greatly concerned about names. He maintains that our business is not so much to inquire what a word properly signifies as how it is commonly understood. His writings are lit up by quaint and homely similes, but they are free from the pedantry of his time. Sir Clifford Allbutt thinks he was lacking in imagination. Perhaps that is so, and I think the result is that although some of his conclusions are incomplete and inadequate they contain remarkably little that is erroneous.

And about his character: there is in the opening sentences of his will a humble and definite statement of his Christian faith, and in his book on generation he expresses his conviction of the immanence of God. "He takes," Harvey says,

"the right and pious view of the matter who derives all generation from the same eternal and omnipotent Deity at whose nod the universe itself depends."

Aubrey says that Harvey, like his brothers, was choleric. You may say that the Treviso letters support that assertion, but remember he had great provocation, and he was a gouty subject. At all events, his choleric temper did not interfere with his courtesy and modesty in controversy nor with generous appreciation of the work of his contemporaries. Harvey's power of concentration and detachment in biological observation in adverse surroundings was amazing. He was patient and laborious in his investigations and reluctant to make any premature announcement of his conclusions. He was content to wait the judgment of time and enlightenment. He grew more and more fond of contemplation and even of solitude at times, because it gave him greater opportunity for contemplation. His love of family and of friends has been already noted, and to this may fitly be added his unfailing kindness to young men and readiness to advise them as to travel and books and his willingness to take trouble on their behalf.

The concluding parts of his last letters are very touching. The nearer he approaches the Great Divide the more he craves for the abiding remembrance and the affection of his correspondents. It is not only the old man eloquent, but the old man mellowed and gentle.

And now in these severe and strenuous days, when we trust that the "winter of our discontent" is soon to pass away, we recall once again the last exhortation of our great master. He bids us "ever to search out and study the secrets of Nature by way of experiment, and for the honour of our profession to continue in mutual love and affection amongst ourselves."

PENETRATING WOUNDS OF THE ABDOMEN.¹

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GUNSHOT wounds of the abdomen form a subject of considerable importance, for there has been a decided difference of opinion as to the best line of treatment; some strongly urge operative measures whenever possible, and others believe that for most cases expectant treatment offers the best prospects. It may be safely said that extreme views in either direction will prove to be wrong, but the value of operative treatment under proper conditions is becoming increasingly obvious.

It is clearly an advantage that we should be able to discuss questions such as these before we have to deal with cases in large numbers out here, and the practical point to be borne in mind is, how shall we treat these injuries under the conditions which exist around Salonika. The only considerable experience of abdominal injuries is that gained in France, and in framing our conclusions we must draw largely from that experience, remembering that the conditions here may necessarily fall short of the very favourable conditions under which surgery is done in France at the present time.

It has been suggested that there is a tendency to attach undue importance to these injuries, considering that they form only a small proportion of the total number of wounds. Anyone, however, who has come into close contact with numbers of men recently wounded cannot but recognise the importance of the abdominal group; the cases owe this importance to their urgency, their high mortality, and to the fact that many lives may be saved by appropriate treatment.

Before discussing the relative merits of the different lines of treatment it is essential that the high mortality of penetrating abdominal wounds should be realised. The multiplicity and severity of the lesions make a high mortality inevitable whatever treatment be adopted; this fact is quickly grasped when one sees the extent of the injuries as revealed on the operating table or in the post-mortem tent. Available statistics all emphasise the same fact. It is obviously difficult to get complete statistics, but the following are given for what they are worth. They are based on figures collected by Colonel Cuthbert Wallace, C.M.G., consulting surgeon to the

¹ A paper read before the British Medical Society, Salonika.

Army, and those worked out in the unit to which I was subsequently attached. They refer to results during the first six months of 1915, and attempt to show approximately what proportion of patients with penetrating abdominal wounds reached England, *before operative treatment became general*.

Of 100 abdominal cases with penetrating and non-penetrating wounds admitted into field ambulances 30 died in the field ambulances, and these were presumably cases of penetrating wounds; the remaining 70 were taken to casualty clearing stations, where half of them, that is 35, were found to be penetrating cases. Of these, 18 died in the clearing stations and 17 were sent to the base. As far as can be judged from the information available the mortality of these cases in the base hospitals at that time was at least 35 per cent.; this means that of the 17 cases reaching the base at least 6 would die, leaving 11 to reach England. To sum up, it would appear that in 100 cases of abdominal wounds, 65 were instances of penetrating wounds—namely, the 30 that died in the field ambulances and the 35 diagnosed as penetrating cases in the clearing stations; 11 of these ultimately reached England. In other words, the mortality up to that stage was about 83 per cent.

Before coming to present-time conditions I will briefly refer to the treatment of these injuries before the present war. In civil life, of course, operation is the general rule, provided that the patient's condition allows it; all surgeons recognise that a man in civil life shot through the abdomen will usually have his best chance of recovery if he is operated upon. As regards the South African War it is difficult to get definite facts. Everyone is agreed that operations did badly, though it is not true that all ended fatally. As regards the penetrating wounds which were not operated upon one cannot but believe that most of them were fatal also, for rifle-bullet wounds of the abdomen are very fatal in the present war and in civil life, and presumably similar results occurred in South Africa. Surgeon-General Sir G. H. Makins, K.C.M.G., C.B., for instance, says that he saw no case recover in which the small intestine was certainly injured. The practical point is that operative treatment for these injuries failed in South Africa. The conditions were unfavourable; cases seldom reached the surgeon in their early stages; moreover, abdominal surgery was then 15 years younger than it is now.

In the early part of this war surgical work was influenced by the South African traditions, which naturally led most surgeons to believe that expectant treatment would give better results than operative treatment. Apart from this the conditions of warfare obtaining in the initial stages of the war were quite unsuitable for early operative treatment, and such work as was done was not a success. The cases were usually only operated upon in their later stages, and this fact, combined with the inevitable high mortality of abdominal wounds and the unfavourable experience of South Africa, discouraged operations.

In the spring of last year, however, when siege warfare had become established, operative treatment was restarted, and every facility that could be devised was supplied. Clearing stations were a short distance behind the firing line, the operating theatres were fully equipped for abdominal work, and arrangements were made that abdominal cases should be at once transported to these clearing stations.

Coming now to my personal experiences, I commenced work on these cases early in July of last year, being stationed at a casualty clearing station in France commanded by Lieutenant-Colonel V. J. Crawford, D.S.O. Here I had the pleasure of working with Captain J. B. Haycraft, the surgical specialist to the unit. As a rule, we took the abdominal cases admitted into the hospital alternately and assisted each other. In this unit the main operating theatre was in a room in a château; a large landing outside this room was boarded in and converted into a second theatre, which we reserved for the septic cases; in addition to this there were two operating tents. The facilities for abdominal work were excellent, and these we owed to Surgeon-General W. G. MacPherson, C.B., C.M.G., K.H.P., D.M.S. of the Army to which we were attached. In the first place the surgical equipment in that clearing station was as good as that of a civil hospital in England; anything that we needed for abdominal work was supplied at once. Secondly, we were greatly helped by an order that abdominal cases were to be sent at once to the nearest casualty clearing station, provided that the patients were fit to travel. The

proviso must be noted, for it was clearly for the medical officers of the field ambulances to use their discretion as to whether or not a patient was fit for transport. As a result of this order we got the majority of our cases within a short time of their injuries, often within 1½ to 3 hours.

When I started work in this unit I had the advantage of discussing the principles of treatment with Colonel Cuthbert Wallace. At first we were rather inclined to select cases for operation, watching those in which there was thought to be a fair chance of recovery under expectant treatment; but we found that most of those treated expectantly got into difficulties and usually died, and so we were led to operate upon most cases on principle as early as possible.

There were certain groups in which operation was clearly impossible or inadvisable.

1. Cases moribund on arrival; a proportion of cases reaching the clearing hospitals are unfortunately beyond surgical help. In some of these cases the condition may be so improved by infusion, warmth, and other methods of stimulation that operation becomes possible later on.

2. In injuries of the liver and kidneys when one felt sure that the hollow viscera had escaped, especially in rifle-bullet wounds, operation usually seemed contraindicated.

3. In the diaphragmatic group, cases in which the projectile appeared to have traversed the top of the abdomen, the diaphragm, and the lower part of the chest, expectant treatment is usually the wisest plan. Most of these patients have hemothorax; the abdominal lesions are difficult of access, and in all ways such cases are unfavourable for operative work.

4. There were two cases in which rifle bullets had apparently traversed the lower half of the abdomen, without producing abdominal symptoms or signs. As the physical condition in each case was perfectly normal operation was not performed, and these cases were evidently examples of a small group of fortunate cases in which the hollow viscera escaped injury. Reference to this will be made better.

The routine procedure adopted for these abdominal cases was as follows. On admission the patients were put comfortably to bed, warmed with plenty of blankets and hot-water bottles, given saline solution subcutaneously or by the rectum, and morphia if in pain. The majority were suffering from shock and the effects of hæmorrhage; these were kept for two, four, or six hours until they were better, and operation was not performed unless the radial pulse was of fair volume and its rate under 140. We were convinced that it is not advisable to operate immediately on patients with rapid pulse-rates; they nearly always require much repair work, and the prospects of success are decidedly better if time is spent in attempting to improve their general condition. Some patients presented few or no signs of shock, and these were operated upon as early as possible. In doubtful cases, when it was uncertain whether the peritoneal cavity had been penetrated or not, our rule was to explore the wound. By doing this we several times discovered intestinal injuries at an early stage before there were any external signs of their existence.

The Operation.

For wounds of the lower abdomen we found it a considerable help to have the pelvis raised, the best position being about 30° from the horizontal; for efficient treatment of bladder injuries this was essential. The incision was usually placed vertically in or near the mid-line, but of course it varied according to circumstances; the important point was that it should be sufficiently large to allow quick and free access to the injured parts.

After the opening of the peritoneal cavity the first step was to clean out the blood and other fluid, especially from the pelvis, which usually contained a large pool. Until this had been done it was difficult to see accurately the extent of the damage. A systematic examination of the abdominal contents was then rapidly made. The small intestine and its mesentery were first looked over from the caecal end up to the duodenum; the operator lifted out 7 or 8 inches of the intestine, examined it, and then left it for his assistant to return whilst he proceeded to examine the next loop. In this way there was never more than a foot or so of intestine outside the wound, and the whole of the small intestine with its mesentery could be examined in three or four minutes. Unless this systematic search is made it may happen that eight perforations are found and dealt with and the ninth overlooked. The search was next extended to the

colon, stomach, and any other viscera which might have been injured. Tears and perforations were treated by suture or excision of the intestine according to circumstances, and mesenteric injuries were carefully dealt with. Finally the pelvic cavity was usually irrigated with saline solution, some of which was left there, and a large drainage-tube inserted and secured by a stitch.

The patient's general condition was closely watched by the anæsthetist throughout the operation, and if necessary saline was given under the skin or intravenously. Speed is essential in these cases, for there is often much to do and the patients will not stand prolonged operations; also there are often other patients awaiting treatment. Thus, in a period of 24 hours during the battle of Loos 10 laparotomies and over 30 other operations were performed in one of our theatres.

The after-treatment of the cases required much common-sense and strenuous work. It is largely a matter of good nursing, and in this respect we were particularly fortunate. The administration of fluid in abundance is the most important point, for preference subcutaneously and by the mouth. The cases were usually kept in the hospital for 14 to 20 days, and then being convalescent were transferred to the base. Many of the patients were sent by ambulance barge, which we found the most comfortable method of transport for these abdominal cases. Necropsies were performed in the fatal cases unless pressure of work made this impossible; in this way much valuable information was obtained which helped us in our later operations.

Special Regions.

We will now consider certain points in connexion with the different regions of the abdomen.

In wounds of the upper abdomen the question of operation is often a difficult matter to decide, and each case requires careful consideration. It has already been said that when the projectile has wounded the diaphragm and caused a hæmothorax the case is usually unsuitable for operation, the chances of recovery being probably greater with expectant treatment. This is especially so if the right side is involved, for then the wounded liver may recover spontaneously and other visceral injury is unlikely. When the stomach area is involved exploration is advisable. It is true that clean perforations of the stomach may sometimes heal naturally, but the lesions are often tears rather than perforations, and other viscera, such as the splenic flexure, the spleen and the kidney, are frequently involved.

Wounds of the central and lower part of the abdomen are exceedingly fatal if left alone, and we made an invariable rule to operate on these cases provided that the patient was well enough to stand it. Multiple injuries of the small intestine were nearly always found—perforations or tears varying in number from 1 to 15 and injuries of the mesentery, often necessitating resection of the involved gut. In addition, wounds of the colon and other parts complicated matters in many cases.

A rapid survey of the extent of the intestinal and mesenteric injuries should be made, and the operator can then decide upon the best method of repair. Our experience led us to treat perforations and tears by suture whenever practicable, even if this caused some constriction of the gut. The extent of the injury or implication of the mesentery, however, will often make resection necessary, and then the point of importance is that the intestine should be resected well beyond the injured area, especially on the proximal side. Occasionally two portions of intestine require resection, and even with this the patient's life may be saved.

Wounds of the back, buttocks, and thighs which implicate the abdomen are very severe injuries, for it often happens that many loops of intestine are damaged. It is also obvious that the abdominal injury in these cases may be overlooked in the first instance, and serious delay may result. Colonel Crawford kindly arranged that all cases with wounds of the back, buttocks, and thighs should be admitted into the section of the unit reserved for abdominal cases; in this way early recognition of those in which the abdomen was involved became easy.

Prolapse of abdominal contents through a wound was almost always a signal of deeper internal trouble; a projectile which had so damaged the abdominal wall as to allow prolapse had almost invariably produced havoc inside.

An innocent-looking piece of prolapsed omentum commonly covered one or more large holes in a loop of intestine.

Spontaneous recovery of an intestinal perforation must be a very rare event, if it ever occurs. It is conceivable that minute punctures of the intestine might occasionally heal by natural processes, but lesions of this kind are not seen in warfare; rifle bullets and shell fragments produce full-sized perforations, tears, lacerations, and even complete division of the intestine. In that unit we saw and carefully examined a large number of intestinal injuries in all stages and we found not a particle of evidence to suggest that these lesions ever heal spontaneously. Surgeon-General Makins has sifted the evidence on this point in a paper published in the *R. A. M. C. Journal* for February last, and he concludes:—

It is indubitable that these results indicate that primary operation in properly selected cases affords the one and only chance of recovery for a patient who has received a perforating wound of the small intestine.

A small number of recoveries after wounds through the intestinal area are explicable in the following way. We came across two cases, and possibly a third, in which bullets or shell fragments had traversed the peritoneal cavity without causing any gross visceral injury. For instance, in one case a piece of shell the size of one's thumbnail entered through the loin and was found lying under the anterior abdominal wall wrapped in omentum; there had been a little hæmorrhage but no visceral injury of any kind. Such cases treated expectantly might lead one to suppose that injured intestine was recovering naturally; experience shows that in these cases the hollow viscera have escaped injury.

Expectant Treatment.

There will always be some cases in which expectant treatment is advisable or in which it is the only course practicable. The essential features of this treatment are absolute rest and measures to minimise the effects of hæmorrhage and shock—morphia and the regular administration of fluid. Morphia must be used freely, and as a rule its dose should be measured by the degree of pain. There is nothing to be said in favour of withholding fluids in these cases; the body tissues all cry out for fluid, and they cannot be expected to carry on if dry and parched. Fluid should be given by the mouth or rectum, or subcutaneously, according to circumstances. A patient hit in the lower abdomen or pelvis can take frequent small drinks of water with the best results; if hit in the region of the stomach he can have fluid by the rectum or into the cellular tissues.

The arguments in favour of expectant treatment for most cases break down when one goes into detail and gets at the plain facts. It is pointed out that patients recover without operation, but we now know that these patients form a very small minority. Many of the cases quoted as examples of recovery are instances of non-penetrating wounds, and the remainder mostly concern the liver and kidney; it has also been shown that very occasionally bullets may traverse the peritoneal cavity without causing injury to viscera. The belief that intestinal injuries could heal spontaneously has been disproved, and so one of the main arguments for expectant treatment has disappeared.

A statement sometimes advanced against operative treatment is that harm is done by transport, especially by way of increasing hæmorrhage. Obviously many cases are not fit for immediate transport to the clearing stations, and for this reason the proviso was inserted in the order as to the removal of abdominal cases. It is left to the medical officers of the field ambulances to decide whether the patients are well enough to stand the journey.

The Results of Operative Treatment.

It is obviously difficult to get complete statistics, but those available show beyond dispute the decided improvement which has occurred since operative treatment became more general. It seems fair to contrast the first six months of 1915 with the last six months.

In the first six months of the year we have already seen that the mortality of penetrating abdominal wounds in the field ambulances and clearing stations was 73.8 per cent. (48 out of 65 penetrating cases); and the mortality at the base hospitals appears to have been at least 35 per cent. during this period.

For the last six months of 1915 Colonel Outhbert Wallace has carefully collected the figures in the army to which he is attached. He has kindly sent me the results, and his figures show that the combined mortality in the field ambulances and clearing stations was 61.25 per cent.—a reduction of 12.5 per cent.

511 Penetrating Abdominal Cases, July–December, 1915, reported by Colonel Outhbert Wallace.

| | Total. | Re-covered | Mortality |
|--|--------|------------|-----------|
| Total cases | 511 | 198 | 61.25% |
| Operations | 310 | 143 | 53.9% |
| Operations on— | | | |
| Stomach | 16 | 9 | 44.5% |
| „ and intestine, &c. | 7 | 0 | — |
| Small intestine, suture | 25 | 14 | 44.0% |
| Small intestine, suture, plus other intestinal lesions | 12 | 3 | 75.0% |
| Small intestine, resection | 51 | 13 | 74.0% |
| Small intestine, resection, plus other intestinal lesions | 11 | 1 | 91.0% |
| Large intestine | 61 | 25 | 59.0% |
| Cæcum, suture | 4 | 4 | 0 |
| Solid viscera and genito-urinary organs ... | 65 | 42 | 35.0% |
| No operation— | | | |
| No indications, including liver and kidney cases | 56 | 55 | — |
| Moribund | 145 | — | — |

Cases now reaching the base have been sent there when apparently convalescent from operation, or if not operated upon when apparently safe from serious trouble. One may therefore assume that the base mortality will prove to be substantially reduced, and I think that one may safely say that the total improvement in the mortality is well over 20 per cent. The first six months of this year should give even better figures still, for now operative treatment for these cases has become generalised.

Conclusions.

1. Operations for penetrating abdominal wounds are not advisable unless they can be done in good surgical surroundings and by an operator with some knowledge of abdominal surgery; otherwise disasters will be more frequent than successes.

2. Patients with abdominal wounds should be sent to an operating station as quickly as possible, provided that they are fit to travel; their prospects depend mainly on the quickness with which this can be done.

3. Patients who are not fit to travel should be kept absolutely quiet, warm, and under the influence of morphia; saline infusion, hypodermically or otherwise, is most beneficial. They are then transported to the operating station as soon as their condition improves; the question is usually settled by the character of the pulse. If the pulse-rate is 130 or over, it is certainly best to keep them in the place where they are receiving their primary treatment until improvement occurs.

4. On reaching the place where they can be operated upon patients whose condition is good should be dealt with at once, otherwise two to eight hours should be spent in preparative treatment. Operation is never advisable if the pulse-rate is 140 or over.

5. The abdominal exploration must be systematic and quick: the duration of the operation should rarely exceed 45 minutes.

6. When good surgical conditions are obtainable operation is the best treatment in most cases, and must be done as soon as the patient's condition allows it. Be prepared for a high mortality, but know that early operative treatment will substantially reduce it.

As an appendix to this paper I will give a brief summary of cases operated upon during a period of three months, and in doing so I must thank Lieutenant-Colonel Crawford for permission to make use of these cases. With one or two exceptions the operations were done by Captain Haycraft and myself.

Summary of Cases Operated upon.

Total 71 Recovered 39; died 32.

1. Wound of ascending colon; drainage. Recovered.
2. Multiple wounds of small intestine, sutured; also perforation of bladder. Died.
3. Small intestine, prolapsed loop cleansed and returned. Recovered.
4. Wound of liver. Died of generalised gas septicæmia.
5. Stomach, tear of anterior wall sutured; prolapsed colon and omentum returned. Recovered.
6. Small intestine, perforations sutured. Recovered.
7. Wound of liver, empyema, drainage. Recovered.
8. Spleen pulped, removed; kidney also smashed. Died.
9. Small intestine perforated, sutured; omentum also prolapsed. Recovered.
10. Wound of liver. Recovered.
11. Cæcum, two perforations leaking freely, sutured. Recovered.
12. Small intestine, multiple injuries, excision; also amputation near hip for gas cellulitis. Died.
13. Small intestine, four perforations sutured. Recovered.
14. Small intestine, perforations and wounds of mesentery, excision. Died of gas cellulitis starting from buttock.
15. Bladder, extensive intraperitoneal tear, suture. Recovered.
16. Small intestine, multiple injuries, suture, also loop excised. Recovered.
17. Wound of base of mesentery, intraperitoneal hæmorrhage. Recovered.
18. Small intestine injuries, excision; also perforation of sigmoid flexure sutured. Died.
19. Small intestine, multiple injuries, excision. Recovered.
20. Wound of omentum by shell fragment, entering through loin. Recovered.
21. Ascending colon, tear sutured; retroperitoneal gas cellulitis. Died.
22. Wounds of stomach, splenic flexure and kidney. Died.
23. Wound of descending colon. Recovered.
24. Wound of liver. Recovered.
25. Small intestine, multiple injuries; suture and excision. Died.
26. Small intestine, tears, excised; perforation of rectum sutured. Died.
27. Wound of bladder sutured. Recovered.
28. Stomach, two perforations sutured; kidney pulped. Died.
29. Small intestine, many injuries; excision. Died.
30. Small intestine; perforations sutured. Died.
31. Small intestine; perforations sutured. Died.
32. Spleen, tear packed with gauze. Recovered.
33. Sigmoid flexure; perforation drained. Recovered.
34. Spleen, transverse colon, and liver wounded. Died.
35. Small intestine, multiple injuries; two loops excised. Died.
36. Cæcum, large perforation sutured. Recovered.
37. Small intestine, perforations sutured. Recovered.
38. Wound of liver; much hæmorrhage. Recovered.
39. Wound of liver and omentum. Recovered.
40. Small intestine, perforations sutured. Recovered.
41. Transverse colon, perforation sutured. Died of gas cellulitis.
42. Bladder torn; suprapubic drainage. Recovered.
43. Cæcum, perforation leaking freely, sutured. Recovered.
44. Small intestine, fistula; also gas cellulitis of abdominal wall multiple incisions and drainage. Recovered.
45. Stomach, tear sutured; also wound of liver. Recovered.
46. Small intestine; perforations sutured. Died.
47. Small intestine injuries; excision. Died.
48. Sigmoid flexure of colon; perforation sutured. Died.
49. Hepatic flexure of colon; perforation sutured. Died.
50. Small intestine injuries; excision. Died.
51. Transverse colon, perforation sutured; hepatic ducts torn. Died.
52. Stomach perforations, sutured. Recovered.
53. Liver and kidney wounded. Recovered.
54. Transverse colon; wound drained. Died.
55. Hepatic flexure, tear; drained. Died.
56. Multiple intraperitoneal injuries. Died.
57. Sigmoid flexure, perforation, drained. Died.
58. Sigmoid flexure, perforation, drained. Died of septic bronchitis.
59. Sigmoid flexure, perforation, drained. Recovered.
60. Sigmoid flexure, perforation, drained. Recovered.
61. Ascending colon, perforation, drained. Recovered.
62. Liver, wound of, much hæmorrhage. Recovered.
63. Small intestine, many injuries to bowel and mesentery; two portions excised. Died.
64. Sigmoid flexure, wound sutured. Recovered.
65. Duodenum, perforation sutured. Died.
66. Transverse colon, tear; colostomy. Died of pneumonia.
67. Splenic flexure, wound of, drained; also tear of spleen. Died.
68. Small intestine, perforations sutured; also perforation of sigmoid flexure; colostomy. Recovered.
69. Liver and base of mesentery wounded. Recovered.
70. Small intestine, perforations sutured. Recovered.
71. Small intestine, perforations sutured. Recovered.

UNIVERSITY COLLEGE OF SOUTH WALES AND MONMOUTHSHIRE.—The annual meeting was held on Oct. 19th, Lord Aberdare presiding. The loss in fees during the year ending June 30th amounted to nearly £500, but in spite of this the College had practically paid its way. Referring to the Welsh Medical School, Colonel Bruce Vaughan stated that the scheme, which was the outcome of Sir William James Thomas's gift, had been sanctioned, providing thus for 250 students. The buildings could be proceeded with, provided the Ministry of Munitions gave its assent. It was decided to pray the Ministry of Munitions to place no further obstacles in the way of the immediate erection of the medical school buildings. Only 104 men students are at present left in the College, 37 of whom are studying medicine.

THE TECHNIQUE OF THE AGGLUTININ TEST.

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DURING the past two years there has appeared in the columns of THE LANCET and elsewhere a considerable series of articles and letters dealing with the typhoid agglutinin reaction. The two main objects of these communications appear to be the following: (1) To advocate the employment by all pathologists of the same "standard" method of performing the test; and (2) to prove the superiority of the method originally devised by Professor Dreyer over all other methods, whether microscopic or macroscopic. A subsidiary question has developed in the course of these arguments, consisting in a dispute as to the behaviour of the agglutinin reaction in inoculated persons who subsequently develop a febrile attack. This article is mainly concerned with the two primary objects of the campaign.

1. *The employment of the same method by all users of the test.*—This has both advantages and disadvantages. The main advantage is pleasantly suggested by the idea that if all workers use the same method the results of all are strictly comparable. This is highly attractive in theory, but breaks down in practice for the following reasons.

(a) It is impossible to devise a method of sufficient simplicity to ensure comparable results from a number of individuals of widely different experience and capability. This objection alone would be sufficient to explode the theory for those who are experienced in the teaching of students and post graduates and are acquainted with the widely different results obtained by different users of any of the most simple tests in pathology. In dealing with an agglutination test it must be in the knowledge of most pathologists that when considering what value should be attached to a particular result of a test one asks not by what method was it done, but who did it.

(b) The enforcement of a particular pathological method upon all pathologists is naturally resisted by those who have for years been using a different method and who have carefully satisfied themselves of its value by laboratory and clinical experience. It is an infraction of true scientific independence, and to be resisted, unless the advantages are correspondingly great.

(c) The standard test must be capable of maintaining its standard over a long period, and in the case of Dreyer's method I doubt if this is possible. Different batches of the standard suspension of bacilli must be made from time to time, and the work done with different batches is compared under the same standard. These batches are bound to differ both in the number of bacilli they contain and in the agglutinability of the bacilli. The number of bacteria differ owing to the impossibility of determining with scientific exactitude the number present in a suspension. The number should, however, be approximately identical, as is the case when the suspension used is estimated simply by the opacity of the fluid. Minor variations in agglutinability taking place over a length of time cannot be accurately determined owing to the difficulty of comparison, since a stock agglutinating serum may also vary in strength with time. The main value of a standard test rests upon the use of a standard bacillary suspension, and in spite of the above objections such a standard is within limits possible, provided that one recognises that in the nature of things faulty batches will from time to time be sent out. Such standard suspensions could equally well be used by other methods, macroscopic or microscopic, if such a procedure were really necessary.

(d) The standard test must be simple, and it should be accurate. The simplicity of the test is essential in view of the complete lack of experience and technique among many who must use it at the present time. I do not wish to imply that a simple test is necessarily better than a complicated one, but I strongly object to a not uncommon superstition that a complicated test is necessarily preferable to a simple one. Dreyer's method, compared with other methods in common use, is cumbersome and complicated. Its accuracy is dealt with below.

2. *The alleged superiority of Dreyer's method.*—In an article in THE LANCET of Jan. 1st, 1916, Dr. Ainley Walker asserts that "beyond question the best and most useful of these methods [i.e., macroscopic methods] for accuracy, precision, simplicity, and safety was that devised by Dreyer in 1906." Dr. Walker, however, is more particularly intolerant of the microscopic method, and in the same article clearly and categorically gives his reasons why "the microscopic method entirely falls." His reasons are as follows:—

(a) The number of bacilli in the suspension used varies to an unknown degree at each examination. If this were true and important the objection could be got over by using the same suspension sterilised at a low temperature. But I believe that in practical hands the objection falls to the ground. Anyone thoroughly accustomed to making up bacterial suspensions and subsequently estimating them can judge very closely the strength of the suspension by the opacity of the fluid. Gross errors can be produced by using an almost solid suspension on the one hand, or a perfectly clear fluid on the other. Even in unskilled hands such an error as that hinted at by Dr. Walker is incredible.

(b) Cultures vary greatly in their susceptibility to agglutination. This objection applies to every method, and with reasonable care can be almost entirely avoided. It is found in practice that a strain of typhoid bacilli can be obtained and made use of over very long periods without any appreciable variation in its agglutinability, provided that the subcultures used are made upon similar media under identical circumstances. Of course, strains occur which cannot be agglutinated at all, but such are obviously avoided. Important variations in the strain used are always looked for, and tested for, from time to time. In my experience such variations in a good strain are most infrequent.

(c) The age of the culture, particularly if broth cultures are used, affects the agglutinability. Since a 24-hours-old subculture on a solid medium is, or should be, invariably employed, this objection carries no weight whatever, and should not have been made.

(d) Slight differences in the culture-media may affect the agglutinability of the bacillus. I have for years employed agar containing 5 per cent. of glycerine as the medium for subculture. The agar is standardised and made from the same stock substances. I have never been able to find any appreciable difference in agglutinability from this cause, and these objections (both (c) and (d)) are more likely to occur in the different batches of the "standard" suspensions. Such are Dr. Ainley Walker's objections to the microscopic method, but he adds the following statement: "The method cannot satisfactorily be made use of with killed cultures." It is a fact that cultures killed at too great a heat cannot be agglutinated by any method, but it is difficult to imagine that killed cultures can be agglutinated into masses visible to the naked eye but invisible under the microscope. I have, as a matter of fact, used the method with killed cultures.

On the strength of such objections, not one of which has any practical value, Dr. Walker concludes that "it follows that the microscopic method with fresh living cultures is liable to variations of some hundreds per cent." It would be difficult to find a more misleading statement based upon such flimsy evidence. The microscopic method has certain minor advantages over the macroscopic which I need not here discuss, but proceed directly to consider the possible disadvantages and inaccuracies of Dreyer's "standard" method.

If in spite of the objections natural to the enforcement of a standard technique such an enforcement were deemed necessary, one might at least expect a method which would offer certain advantages. For reasons stated above it should be simple and should afford few bad pitfalls for the unwary. Also it should be accurate. The simplicity of the method may be judged from the directions issued for it. The method is a very lengthy one, largely owing to the number of times the pipette has to be washed out—namely, six times with three different solutions, or 18 times altogether for a single test against one bacillus, and each washing must be thorough or grave errors arise. In practice a number of pipettes are doubtless used, and there is no warning against it, but since the pipettes provided differ seriously in drop capacity an even greater error is introduced. The dropping will depend further upon the pressure exerted on the teat and upon the angle at which the pipette is held, and no warning is issued on these points. Yet it is claimed that the technique can

safely be left in the hands of a laboratory attendant, a procedure which I am convinced should never be advocated even for the most simple manœuvres. In equally practised hands the method is, I believe, slower, more tedious, and more liable to accidental error than is the microscopic or other forms of the macroscopic methods.

The inaccuracies of the Dreyer method as at present employed are dealt with very exactly by Mr. R. Donald in THE LANCET of Sept. 2nd, 1916.¹ These errors are essential errors of the technique, and I will briefly recapitulate the more important of them. A quantitative agglutinin test depends for its accuracy upon the exactitude of the dilution of the serum to be tested. In the microscopic test these dilutions are made by means of a Wright's capillary tube and test, an extremely accurate method which is quite unaffected by variations in size or diameter of the pipette. In the "standard" method the dilutions are made by drop-measuring, and the errors which Mr. Donald points out are actual errors proved by careful measurement. They are as follows. The "standard" pipettes issued are of different sizes. The only three pipettes examined by Mr. Donald differed seriously, and the difference in outer diameter of two pipettes issued specially for the performance of an extensive research differed in their drop count by as much as 20 per cent. The directions given for diluting the serum with saline make no allowance for the difference in drop count of serum and saline, and in making a 1 in 10 dilution of serum there is a further error of 10 per cent. A similar error, but this time of 20 per cent., occurs in the drop-measurement of the "standard" suspension. These errors may balance themselves or they may not; it is a matter of chance, and the same workers, however skilled, using the two standard pipettes with the directions given would at one time have an error of 40 per cent. and at another time none at all. Now an error of 40 per cent. in measurement alone, when the measurements required can be made accurately by a simpler technique, is a very grave indictment of this "standard" method. It is true that the error is greatly reduced if one pipette is used throughout, but the facts are that the standard pipettes have been taken to be "standard," and have been used alternatively with such errors as are stated above, and if only one pipette is used the method becomes extraordinarily laborious.

While attacking the standard method in this manner, and in attempting to refute the attacks which have been made upon the microscopic method, I would like to confess that I have no doubts of the genuine idealistic views of the "standard" originators. I believe both methods have their minor faults and drawbacks, but I venture to support the view that we have not yet attained a method or a *matériel*, which warrants the general imposition of a fixed technique by a central authority.

The subsidiary question, none the less important, as to the behaviour of the agglutinin reaction in febrile inoculated patients, is one upon which I have little evidence to offer. I have looked up notes upon 100 consecutive cases from the Dardanelles. All of these patients had suffered from fever, the great majority being either paratyphoid or dysentery cases. All had been inoculated against typhoid at periods varying from one year to a few months previously. The typhoid agglutinin test was done in 72 of these cases. It was positive in 15, or in 20.8 per cent.; it was negative or partial—that is to say, gave a complete or partial agglutination in 1 in 20 dilutions and a partial or absent agglutination in 1 in 50 dilutions—in 16.7 per cent. It was completely negative—that is to say, it gave no reaction at all or only very slight clumping in 1 in 20—in 62.4 per cent. A 62.4 per cent. of completely negative tests in febrile cases who have been recently inoculated would seem to bear out the contention that the agglutinin content is diminished in such cases. I am unwilling, however, to include myself in the hymn of hate now being directed against Dr. H. L. Tidy on such evidence as I can offer. My cases are not sufficiently numerous, and they lack the evidence which

appears to me advisable—namely, the proof of the amount of agglutinin set up by the inoculation and present before the fever.

This paper would seem to be an attack upon the prominent supporters of the "standard" method; it is not so in reality. I have no doubt that the method as they use it gives reliable results, otherwise they would not advocate it. I merely wish to issue a plea that I and many others may be permitted to use different methods which in our opinion and experience are equally reliable. The whole dispute has arisen out of the very laudable desire to correlate the research of a number of workers. If such correlation were possible by the adoption of a standard method, and could be done only in this way, it would be invidious to criticise it. Yet I believe a simpler and more harmonious plan would be to allow to the workers a choice of any of the recognised methods, in all of which the standard is known, and to leave to a central authority the conversion of those standards into equivalent results.

Queen Anne-street, W.

A METHOD OF APPLYING THE WASSERMANN REACTION IN LARGE NUMBERS.

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AND

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ON several occasions recently we have been consulted upon the technique of the Wassermann reaction by those who propose to superintend or carry out these tests under the scheme promoted by the Local Government Board. Of recent years there have been few publications upon this subject, and therefore it may be opportune to give a detailed description of the technique without discussing the theory or rationale of the process in any way.

The details of the particular method which we describe are as introduced by one of us into the Royal Naval Hospital, Haslar. In this technique the reaction is reduced to the greatest possible simplicity. It is based upon that practised by us for several years, and which has been published *in extenso*.¹ The chief characteristic of our method is the use of a particular antigen composed of tissue extract mixed with cholesterol. Cholesterol was first used as an antigen by Fleischmann but apparently abandoned, and credit is due to Browning, Cruickshank, and Mackenzie for demonstrating first that cholesterol is capable of much increasing the specific action of another antigen. Browning and his co-workers amalgamated the cholesterol with "lecithin" extracted by themselves, but Sachs (1911) suggested the addition of small amounts of cholesterol to the organ extracts already in use.

In 1912 we published an extensive comparative test which we had carried out between various antigens, including Browning's and our own which we had founded upon the suggestions of Sachs. These tests showed that the formula worked out and suggested by us was more satisfactory than those hitherto in use and fulfilled the requirements of a "standard" antigen which would give comparable results in the hands of different workers. During the past four years this antigen has been extensively adopted, and is probably more widely used now than any other.

1. *Collection of the serum to be tested.*—About 0.5 c.c. of blood is required. This is very easily collected from the finger or thumb. The patient swings his right arm rapidly in order to drive the blood into the finger tips; a piece of fairly thin drainage tubing is then twisted round the thumb and two or three punctures are made with a glass "pricker" or surgical needle just proximally to the nail and towards the ulnar side. The blood is collected in a Wright's capsule of suitable size. Fuse the straight end of the capsule. Attach a gummed label inscribed with the number of the case and enter up the particulars in the book under the

¹ Since writing this paper I have read Dr. Atinley Walker's reply to Mr. Donald in THE LANCET of Sept. 23rd. The main inaccuracy is there eliminated on the supposition that only one pipette is used. As I point out, the use of one pipette renders the method extremely tedious, and certainly many users of the method have not confined themselves to one pipette. The directions, in alluding to the pipette as "the" pipette, cannot seriously be considered to convey any warning on the grave inaccuracy which arises if more than one be used.

¹ Brain, 1913, vol. xxxvi., p. 193.

same number. Put away the capsule into an efficient ice chest until required.²

At this point it may be strongly emphasised that it is of no value to spend time upon an elaborate Wassermann technique if the organisation permits of any possibility of mixing one serum with another. Grease pencil should never be used for writing numbers on glass. Every action involved in collecting the sample and "booking" it must be uninterrupted and rigidly according to routine.

2. *Materials required for the test.*—

a. Copper racks to hold 24 test-tubes, as sold by Messrs. Baird and Tatlock, 14, Cross-street, Hatton-garden, E.C., for this purpose.

b. Test-tubes, 4 × $\frac{1}{2}$, washed and finally rinsed in distilled water and dried.

c. 1 c.c. and 10 c.c. graduated pipettes, specially long, graduated to tip (Baird and Tatlock).

d. Washed sheep's corpuscles. Collect the blood from a freshly killed animal into a stoppered bottle containing a few pieces of glass rod and iron wire. Fill only half full. Shake continuously for sufficiently long to defibrinate it. The blood will keep in the ice chest for three or four days. When required, fill the glass centrifuge buckets with the blood and drive down the corpuscles. Remove serum and add saline; shake and centrifuge. This constitutes the first washing. There must be three washings in all. The first may be carried out the day before the corpuscles are required. After the third washing remove the saline without shaking up the corpuscles.

e. Guinea-pig complement. On the day of the test kill a guinea-pig by cutting its throat and collecting the blood in a saucer. The animal is first stunned *slightly* by knocking its head upon the edge of the table. Pour the blood from the saucer into a small conical glass. "Whip" to defibrinate with a piece of cotton-wool upon the end of an iron wire. Centrifuge and pipette off the serum.

f. Antigen. In two bottles A and B. Preparation of heart extract (A). Obtain a fresh human heart. With a pair of scissors cut off the muscular portions of the ventricles and elsewhere, but do not take fat. Mince these pieces and weigh them. Place in a mortar with a little sand and grind them up with absolute alcohol, using 9 c.c. of alcohol to 1 gm. of heart. Transfer the whole to a well-fitting glass-stoppered bottle, and shake occasionally for one and a half hours. Filter into another *well-fitting* glass-stoppered bottle through paper and preserve in ice chest. A deposit will be found to form and this may be filtered off again. Cholesterol solution (B). Take 1 gm. of pure cholesterol, such as Kahlbaum's, and place in a *well-fitting* glass-stoppered bottle. Add 100 c.c. absolute alcohol and put in the stopper tightly. *Shake and heat in water bath* until the cholesterol is dissolved.

g. Amboceptor. This will usually be purchased, although most sera upon the market are somewhat feeble in action.

3. *Standardisation of the amboceptor.*—To be performed with two different guinea-pigs to ensure maximum complement action. The standardisation should be repeated after several months.

a. *Materials.* 1. Saline solution. 2. Tube containing 0.5 c.c. guinea-pig's serum and 0.5 c.c. saline. 3. Tube containing amboceptor diluted 1 in 1000 thus: Tube a = ambo. 0.1 c.c. (exact) + saline 9.9 c.c. (shake); tube b = 1 c.c. from tube a + 9.0 c.c. saline (shake)—this is 1 in 1000. 4. Tube containing 1 c.c. of deposited washed corpuscles + 19 c.c. saline (shake). 5. Rack with 9 test-tubes 4 × $\frac{1}{2}$.

b. *Method.* Fill reagents into the tubes as indicated.

| No. of test-tube ... | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Pipette to be used. |
|----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------------|
| 1. Saline ... | 0.8 | 0.7 | 0.6 | 0.5 | 0.4 | 0.3 | 0.2 | 0.1 | 0 | 10 c.c. |
| 2. Ambo. (tube 3 b) ... | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1 c.c. |
| 3. Complement (tube 2) ... | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 1 c.c. |
| 4. Blood (tube 4) ... | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 10 c.c. |

Shake. Incubate for one hour at 37° C. and then read off the minimal hæmolytic dose—i.e., the first tube which is

absolutely clear. If the m.h.d. does not fall between 0.0001–0.0009 c.c. the test can be repeated, using the stronger dilution of amboceptor (tube 3 a). It is better, however, to use an amboceptor which does fall between these limits.

4. *Daily Routine.*—(1) Wash or complete washing of the blood corpuscles.

(2) Kill the guinea-pig and prepare the serum.

(3) Make up fresh saline solution.

(4) Standardise the complement (A) and antigen control (B). (All subsequent measurements under 1 c.c. are made with the 1 c.c. pipette; up to 10 c.c. with the 10 c.c. pipette; above 10 c.c. with a 50 c.c. measure.) *Materials:* (a) Four tubes in the rack, front row, for A; four tubes in the rack, back row, for B. (b) Complement diluted 1 in 24 (0.1 c.c. complement + 2.3 c.c. saline). (c) Complement 2½ times stronger (0.2 c.c. complement + 1.7 c.c. saline) for antigen control. (d) 5 per cent. corpuscle suspension containing amboceptor. This is made up as follows: The quantity required is 0.5 c.c. for every case to be tested + 10 c.c. Thus if 60 bloods are to be tested, 30 + 10 = 40 c.c. is required. The quantities will be as follows: (3) corpuscles (centrifuged deposit), 2.0 c.c.; (2) amboceptor, 4 m.h.d. per tube—i.e., if m.h.d. = 0.0005, 0.002 per tube × 80 = 0.16 c.c.; (1) saline 37.84 c.c. Every half c.c. of this mixture will contain 0.002 of amboceptor, the correct quantity per tube. Make up in the order of the numbers and shake after each addition. (e) Diluted antigen, made up as follows:—Rinse out and clean a 1 c.c. pipette with spirit. Take 0.3 c.c. of heart extract and 0.2 c.c. of cholesterol and place in a dry test-tube. Run in 7 c.c. of saline and shake.

Method: fill in the 8 tubes in the rack as indicated.

Front Row (A) for Estimating m.h.d. of Complement.

| | 1 | 2 | 3 | 4 |
|---|------|-----|------|-----|
| 1. Saline ... | 0.85 | 0.8 | 0.75 | 0.7 |
| 2. Complement (tube b) ... | 0.15 | 0.2 | 0.25 | 0.3 |
| 3. Corpuscles + amboceptor (tube d) ... | 0.5 | 0.5 | 0.5 | 0.5 |

Back Row (B) for Antigen Control.

| | 1 | 2 | 3 | 4 |
|----------------------------|------|-----|------|-----|
| 1. Saline ... | 0.35 | 0.3 | 0.25 | 0.2 |
| 2. Complement (tube c) ... | 0.15 | 0.2 | 0.25 | 0.3 |
| 3. Antigen (tube e) ... | 0.5 | 0.5 | 0.5 | 0.5 |

Shake. Put rack into a water bath at 37° C. for 10 minutes to see whether the front-row tubes are laking properly, and then transfer to the incubator to complete 1 hour. Read the m.h.d. of complement in the front row and put 0.5 c.c. of corpuscles (tube d) into each of the back-row tubes. Put into the water bath and note whether the tube behind the m.h.d. tube is laked (about 15 minutes or less). If so, continue as in following table:—

If m.h.d. is tube 1 use 0.5 c.c. of a 1 in 33 dilution of complement for each tube.

| | | | | | | |
|---|---|---|---------|---|---|---|
| " | 2 | " | 1 in 24 | " | " | " |
| " | 3 | " | 1 in 19 | " | " | " |
| " | 4 | " | 1 in 16 | " | " | " |

If not, take another guinea-pig.

5. *Preparation of serum for testing.*—While the complement is undergoing standardisation, or at any other time on the day of the test, the sera should be distributed into the tubes. The numbered capsules are centrifuged and a series of test-tubes are set out in the racks, each numbered to correspond to the capsules. The numbering of the tubes must be indelible, and is best carried out by Donald's method. 1. Warm the tube in the flame. 2. Inscribe a bold figure on it with ordinary blue-black ink. 3. Burn in the ink by heating in the flame to a point short of the fusing temperature. From each capsule transfer 0.1 c.c. of clear serum to the corresponding tube. This is conveniently done with Donald's dropping pipettes, thus:—1. Pull out a piece of glass tubing into two pipettes. 2. Pass the pipette through a particular hole in a wire gauge plate, when it engages cut it off flush with the plate. The actual hole to be used is found once and for all by experiment. A pipette made in No. 53 Stubbs will deliver 0.1 c.c. of serum in 4 drops. Always hold the pipette vertically and wash with water between each serum. When the sera are all filled in make the tubes into a bundle in some safe and convenient manner and suspend them in a water-bath standing at 55°–56° C. for 30 minutes. Then replace them in the racks in sequence. When testing cerebro-spinal fluid use twice as much and do not heat it.

² If the ice chest is inefficient or if the sera have been sent by post or badly collected, it is better not to keep the capsules for several days but to centrifuge them at once and keep the serum separate from the corpuscles.

6. *Preparation of the reagents for use.*—*a.* When the complement is standardised make up a sufficient quantity of the correct dilution to allow 0.5 c.c. for each tube and a little over. *b.* Also make up exactly the same quantity of diluted antigen as shown in the table. Mix in the manner already described for antigen.

| No. of tubes. | C.c. | Heart. | Cholesterin. | Saline. |
|---------------|------|--------|--------------|---------|
| 30 | 15 | = 0.6 | + 0.4 | + 14.0 |
| 40 | 20 | = 0.8 | + 0.53 | + 18.6 |
| 50 | 25 | = 1.0 | + 0.67 | + 23.3 |
| 60 | 30 | = 1.2 | + 0.8 | + 28.0 |
| 70 | 35 | = 1.4 | + 0.93 | + 32.6 |
| 80 | 40 | = 1.6 | + 1.06 | + 37.3 |
| 90 | 45 | = 1.8 | + 1.2 | + 42.0 |
| 100 | 50 | = 2.0 | + 1.34 | + 46.6 |
| 110 | 55 | = 2.2 | + 1.47 | + 51.3 |
| 120 | 60 | = 2.4 | + 1.6 | + 56.0 |
| 130 | 65 | = 2.6 | + 1.73 | + 60.6 |
| 140 | 70 | = 2.8 | + 1.86 | + 65.3 |
| 150 | 75 | = 3.0 | + 2.0 | + 70.0 |

7. *The test proper.*—Mix the diluted complement and antigen together, and then, *without delay*, measure 1 c.c. of the mixture into every tube. Shake. Incubate for one hour in the air incubator. Add 0.5 c.c. of the corpuscle-amboceptor mixture to each tube. Place the racks in the water-bath and read results when some are quite laked and others quite opaque—i.e., in about 10 minutes.

8. *Reading results.*—When judging between complete inhibition and slight hemolysis, depend more upon opacity than colour. Describe the inhibiting sera as ++++ (complete); +++; ++ or +. +++++ and +++ will be diagnostic of syphilis, ++ and + will be more or less doubtful when the tester has no personal knowledge of the case. If, however, the case is known to have had syphilis, ++ and + assume much more importance. The great majority of cases give ++++ or 0.

THE OCCASIONAL ABSENCE OF A RISE OF TEMPERATURE FOLLOWING THE ADMINISTRATION OF DIAGNOSTIC DOSES OF TUBERCULIN TO TUBERCULOUS PERSONS.

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AND

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It is well recognised that a local reaction and rise of temperature following the administration of tuberculin does not necessarily indicate the presence of an active lesion, signs of a focal reaction alone giving any evidence likely to be of assistance in the diagnosis. On the other hand, many believe that active disease can definitely be excluded if the usual diagnostic doses of tuberculin are not followed by any marked rise of temperature. Our reason for sending these few notes is to emphasise the fact that patients suffering from active tuberculosis and who have not been previously treated with tuberculin may have no rise of temperature of even 1° F. above normal following the administration of diagnostic doses of tuberculin. In other words, the absence of a temperature reaction after the administration of maximum diagnostic doses of tuberculin does not prove the absence of active tuberculosis.

CASE 1.—The patient, a male aged 44, had a history of cough on and off for ten years, more marked since November, 1913. In July, 1914, he was admitted to the sanatorium for observation. He had received no tuberculin treatment prior to admission. There was impaired resonance at the right apex, but no sign of active disease. As some doubt existed as to the diagnosis, a short time after admission, at intervals of three and four days, 0.00002 P.T.O. and $\frac{1}{2}$, $\frac{1}{2}$, 1, 2, 5, and 10 milligrammes of tuberculin (T.) were given. The four-hourly chart showed no rise of temperature, except on the day following the $\frac{1}{2}$ and 1 milligramme doses, when the mouth temperature rose to 98.6° and 99.2° F.; on two occasions prior to the administration of tuberculin a temperature of 99.2° had been recorded. The local reaction was slight. The patient's weight steadily rose from 55.5 kilos on July 17th to 60 kilos on August 20th, when he

was discharged. A trace of albumin but no tubercle bacilli were found in his sputum at that time.

The patient's condition remained stationary until November, 1915, some 15 months later, when he was readmitted with definite crepitations at the right apex and tubercle bacilli in the sputum. On Dec. 20th, 28th, and 31st, and Jan. 6th $\frac{1}{2}$, $\frac{1}{2}$, 1, and 5 milligrammes of tuberculin (T.) were administered, followed by no increase of temperature over the normal, except on two occasions, 99° being recorded on the third day after the $\frac{1}{2}$ and 5 milligramme doses; a temperature of 99° had been recorded on Dec. 11th a short time prior to the injections. On Jan. 9th there was increase of cough and sputum but no rise in temperature. The sputum was then sent to the Lister Institute for examination in order to exclude the possibility that saprophytic acid-fast organisms had been mistaken for tubercle bacilli; the guinea-pigs inoculated showed macroscopic signs of tuberculosis.

This case seems to prove that the routine diagnostic doses of tuberculin may not be followed by a temperature appreciably over the patient's normal temperature (*a*) at an early stage of the disease when tubercle bacilli cannot be found in the sputum, and (*b*) at later stages when these are present and even when a focal reaction indicated by increase of cough and sputum is caused.

CASE 2.—The patient, a male aged 2, was admitted suffering from spinal caries and healed tuberculous abscesses on the foot. He received $\frac{1}{2}$, $\frac{1}{2}$, and 1 milligramme of tuberculin (T.), the highest subsequent temperature being 98.6° F. Five months later an abscess formed on the dorsum of the foot, broke down, and remained open for some time. In this case the maximum dose administered was 1 milligramme, but the child was only 2 years of age.

In this connexion it is interesting to note that of the animals infected with human tubercle bacilli and tested with homologous tuberculin the following gave a temperature reaction¹ (rises of 0.9° C. over the normal): 107 of 124 calves, or 86.3 per cent.; 6 of 6 goats, or 100 per cent.; 10 of 11 pigs, or 90.9 per cent.; and 4 of 4 horses, or 100 per cent. Evidently neither in man nor in animals does the absence of a temperature reaction following tuberculin exclude active tuberculosis.

Brighton.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ELECTRO-THERAPEUTICS.

Exhibition of Case and of Skiagrams.—Gas Gangrene.

A MEETING of this section was held on Oct. 20th, Dr. G. HARRISON ORTON, the President, being in the chair.

Dr. E. P. CUMBERBATCH showed a female patient, about 60 years of age, for the purpose of illustrating what could be accomplished by the diathermic cautery in cases of malignant disease. In 1913 she came to him with a rodent ulcer on the scalp, measuring 1 by $\frac{1}{2}$ in. in diameter. Zinc ionisation, repeated six times, produced no benefit; neither did a course of X ray treatment. A combination of both those methods was equally barren of results, for at the end of 10 months the diameter of the ulcer had increased to 1 $\frac{1}{2}$ by 1 $\frac{1}{2}$ in. Accordingly, in March, 1914, he commenced the use of the diathermic cautery, cauterising with it the edges of the ulcer and the granulations at the base. There could now be seen a central area of parietal bone occupying the base of the ulcer, and around that the tissue was apparently healthy. That greatly improved condition had persisted for a year and seven months. In treating bone cases Dr. Cumberbatch insisted on great care being taken not to allow the diathermy to damage the periosteum.—Dr. W. J. TURRELL, in discussing the treatment, said that no attempt should be made to treat the whole growth at once, when the wound was a large one, but that treatment should be proceeded with in stages, so that the effect of the previous application could be assessed before entering upon another.

Dr. H. A. ECCLES showed, by means of the epidiascope, a valuable series of skiagrams of Fractured Jaws, from a

¹ Final Report of Royal Commission on Tuberculosis, Part II. Appendix Report on Tuberculin Tests.

special jaw section of the large military hospital to which he was attached. Every patient was radiographed at the earliest opportunity after admission, and in many cases three or four pictures were taken to determine the effect of the treatment or the presence of sequelæ. The chief purposes served by radiography in jaw cases were: to diagnose fracture, to ascertain the position of the fragments before and after replacement, to ascertain whether roots of teeth were present in the fracture, their presence being a fruitful cause of non-union; to determine the degree of union, the condition of the bone, and the state of the bone-graft; and to detect and localise foreign bodies. Some 60 per cent. of these cases were returned to the front from the department.—Several members discussed the contribution, and Dr. EOLLES replied.

DR. AGNES SAVILL contributed a short paper on her experiences in a hospital near the firing line of cases of Gas Gangrene, and by means of a series of skiagrams demonstrated the peculiar appearances seen in this terrible disease. Associated with gas gangrene were so many micro-organisms that it would be difficult to assign specificity to any one of them; and pathologists were now working at the problem in order to discover the direct and the contributory causes of the two types, the localised and the massive. Of the cases admitted between July and the middle of September 304 were found to contain the micro-organisms usually found in gas gangrene, and over 100 of them presented on admission definite clinical signs of gas. At the hospital every wound was reported upon by a bacteriologist, and cases presenting clinical signs which needed surgical intervention were operated upon as soon as possible, and those which had a mixed aerobic and anaerobic infection were given operative precedence over the others. In the most severe and fatal cases the radiologist was able to detect a fine striation dividing the muscular fibres; it was seen only about 24 hours before death. A French worker considered that the *vibrio septique* was the causal organism of gas gangrene, but *B. perfringens* (in a large proportion), *aerogenes capsulatus*, *sporogenes*, and *histolyticus* had all been found in such cases. When *sporogenes* was present the skiagram showed a cloudy shadow or small bubbles. Only two of the cases of the numerous series exhibited the fine striation lines. At present the surgeon could rely upon the radiologist in cases of this disease in much the same way as the physician could rely upon the bacteriologist in a case of suspicious throat.—A discussion followed.

New forms of apparatus were also shown.

LONDON DERMATOLOGICAL SOCIETY.—At a meeting of this society on Oct. 17th Dr. W. Knowsley Sibley explained in his presidential address that the objects of the society were consultative, educational, and social. He appealed to the profession to stand as a body against the invasion of all German importations, this stand to be taken in common with our Allies.—Captain W. Griffith, R.A.M.C., showed three cases of Dermatitis Herpetiformis and one of Recurrent Summer Eruption.—Dr. Morgan Dockrell: A case of Generalised "Chorionitis" in a man aged 55, a telegraph fitter. He attributed the cause as being due to exposure; the condition had improved with radiant heat baths and internal treatment of thyroid extract 15 grains a day and injections of pilocarpine 1/6 grain three times a week.—Dr. J. L. Bunch: 1. A woman, aged 43, with a Swelling behind the Right Ear involving the Anterior Part. He suggested that the case might be one of lymphangioma. 2. A boy aged 12 with Vitiligo.—The President: A case of Lichen Planus becoming atrophic.

HARVEIAN SOCIETY.—At the Harveian Society of London on Nov. 2nd Dr. E. Farquhar Buzzard will read a paper entitled "Warfare on the Brain"; on Nov. 23rd Mr. Robert Jones will open a discussion on the Treatment of Fractures; and on Dec. 7th Dr. B. H. Spilsbury will read a paper on Sudden Death.

LITERARY INTELLIGENCE.—Messrs. Cassell and Co., La Belle Sauvage, London, E.C., announce the early publication of a sixth edition of "Clinical Methods: A Guide to the Practical Study of Medicine," by Dr. Robert Hutchison and Dr. Harry Rainy. The previous edition was published in 1912.

Reviews and Notices of Books.

(1) *Pulmonary Tuberculosis.*

By MAURICE FISHBERG, M.D., Clinical Professor of Tuberculosis, New York University. Illustrated. Philadelphia and New York: Lea and Febiger. 1916. Pp. 639. Price \$5 net.

(2) *Pulmonary Tuberculosis in General Practice.*

By HALLIDAY G. SUTHERLAND, M.D. Edin., Tuberculosis Officer for North Marylebone and Medical Officer to the St. Marylebone Tuberculosis Dispensary. Illustrated. London: Cassell and Co. 1916. Pp. 290. Price 10s. 6d.

It is becoming increasingly recognised that in order to command success the treatment of pulmonary tuberculosis must be continuous, and this necessity is obvious when it is borne in mind that infection is, as a rule, acquired in early youth, while the risk of the disease developing or relapsing lasts into old age. Tuberculosis is nearly conterminous with life itself. The treatment of the patient—or rather the supervision of the whole life of the tuberculous subject—cannot therefore be left to the consultant or to the sanatorium officer, but must in the main be the concern of the family physician, who alone has the opportunity of dealing with the case as a continuous whole.

(1) Dr. Fishberg has written his book to supply the general practitioner with information concerning the etiology, diagnosis, prognosis, and treatment of pulmonary tuberculosis, its clinical forms and common complications. An experience of 18 years in dealing with tuberculosis problems in New York City convinced him that the practitioner can, and should, do more than attempt to recognise the disease early in order to send the patient to an institution, and that careful home treatment is productive of practically the same results as institutional treatment, and can be given at a smaller cost to the patient and to the community. His book is intended to equip the practitioner with the information which will enable him to carry out this home treatment effectively. Dr. Fishberg writes with authority as one who has practical knowledge of the things of which he writes. He has no special axe to grind, and his book may be read from beginning to end without discovering that he has invented or improved any item in the whole treatment of the tuberculous patient; but there are few pages which do not contain some illuminating suggestion or which do not throw new light on some old aspect of the disease. Koch's experiment on himself in which he found that 250 c.m.m. of old tuberculin produced severe febrile reaction is well known and the correct deduction frequently drawn, but we do not remember having read elsewhere the statement that the necropsy showed him to have suffered from extensive pulmonary tuberculosis.

Dr. Fishberg, in emphasising the lesson that good food is a more important factor in recovery than good air and even good residence, quotes the remarks of an American historian, W. Garrott Brown, who succumbed to phthisis, on the difficulty of discovering the place where he could breathe freely and constantly the right kind of air and at the same time eat in abundance the right kind of food. He made the melancholy discovery that Americans who could be induced to "take boarders" who are sick were, many of them, such as had already failed to minister acceptably to boarders who are well.

The arrangement of the book is simple and easy to follow. Dr. Fishberg makes no attempt at elaborate classification of the clinical forms of tuberculosis. He recognises that to be of practical service the classification must have a prognostic value, and he therefore describes the symptoms under the seven simple headings: chronic phthisis, incipient stage; chronic phthisis, advanced stage; acute phthisis; fibroid phthisis; abortive pulmonary tuberculosis; pulmonary tuberculosis in children; and phthisis in the aged. It is not very deep of the author, but the practitioner will thank him for it. Physical signs are dealt with as though Dr. Fishberg took a personal interest in them: the methods of Krönig and Goldscheider come into their own, and the chapter on percussion is greatly helped by the excellent and artistic illustrations. Fig. 60 is quite brilliant in its helpfulness. The value of medicinal treatment is duly recognised by the author, who finds, indeed, no panacea in drugs, but agents

which exert a beneficial influence on some of the annoying clinical phenomena. Dr. Fishberg is frankly sceptical of the value of tuberculin in treatment, and considers that the general practitioner should not use it at all. His book must not, therefore, be consulted as a guide to its administration. To the subject of artificial pneumothorax he devotes more than 30 pages, on account, as he says, of the efficacy of the treatment in selected patients where everything else has failed to afford relief. This section is a safe guide to practice. We cannot conclude without paying a tribute to the author's wide reading and his catholicity of view, which renders his book of equal value in whatever country it is read. The text and illustrations are both without blemish.

(2) Dr. Halliday Sutherland has also written his book for general practitioners and has succeeded in making it attractive. He has reduced the pathological section of his subject to its smallest dimensions, limiting it to the minimum necessary for the interpretation of clinical signs. This has given him adequate space to devote to diagnosis and the course of the illness, describing symptoms and physical signs in a clear and interesting manner. We wonder whether the author is really well advised in adding yet another table of graphic signs and abbreviations to the many which are already available and which seem to some to darken knowledge. We do not know whether Dr. Sutherland has shown his polyvalent tuberculin to present such practical advantage over other forms of tubercle vaccine as to deserve a place where the room is already so crowded. But it would be captious to refuse the author the right to lay stress on some of the points to which he has himself paid special attention. The book is a most useful guide for the general practitioner and contains much essential advice in a small compass.

LIBRARY TABLE.

Manual of Operative Surgery. By JOHN FAIRBAIRN BINNIE, A.M., C.M. Aberd., F.A.C.S., Surgeon to the Christian Church, the German, and the General Hospitals, Kansas City, Mo., &c. Seventh edition, revised and enlarged. With 1597 illustrations, a number of which are printed in colours. London: H. K. Lewis and Co., Limited. 1916. Pp. 1363. Price 32s. net.—It can hardly be necessary to say much about this edition of a well-known work, though, as it is possible that some surgeons do not know it, we may mention that it contains an epitome of all the operations which may be performed in surgery; it gives briefly, but in sufficient detail for the practising surgeon, the methods of performing an immense number of operations. It is not intended so much for the student as for the surgeon who, being called upon to perform some operation which he has not done before, will find in this volume the facts which he needs. The present issue contains a few new features, and it has been brought thoroughly up to date. A chapter on the surgery of the heart has been added, and a chapter on war surgery, written by Dr. Walter Sutton, also finds a place. The book can be thoroughly recommended to all surgeons.

Anatomía de los Conductos Biliares y de la Arteria Cística. By Dr. PEDRO BELOU, Profesor Titular de Anatomía Descriptiva de la Facultad de Ciencias Médicas de Buenos Aires. With 102 figures and 21 plates, 14 of which are coloured. Buenos Aires: Imp. "Oceana," Calle Chile 525. 1915. Pp. 302.—This admirable monograph deals exhaustively with the anatomy, descriptive, surgical, and comparative, of the biliary apparatus. Professor Belou has made an excellent arrangement of his subject, giving an exhaustive account of his personal investigations, and summing up the previous literature. As a treatise the book is without a rival, and as a monograph it comes as near perfection as it is possible to attain. All the illustrations are good; some are drawings, some are photographs, and all are well reproduced. The coloured plates rank among the most beautiful anatomical representations published. The press which prints and issues a book of this nature is to be congratulated, for the greatest care has been lavished upon every detail which goes towards the making of a good book, and a good book it undoubtedly is.

Wheeler's Handbook of Medicine. By WILLIAM R. JACK, B.Sc., M.D. Glasg., Physician to the Glasgow Royal Infirmary. Fifth edition. Edinburgh: E. and S. Livingstone.

1916. Pp. 552. Price 8s. net.—The Scotch medical schools are fortunate in possessing good text-books of moderate size, and this is one of them. Wheeler's Handbook has now reached its fifth edition, and Dr. Jack states that the changes made in the book since 1894 have been so great that little now remains of Dr. Wheeler's writing. The additions to the present issue are chiefly apparent in the sections on cardiac disease, where the newer diagnostic instruments are figured and described. Increased space has been given throughout to the paragraphs on treatment, dealing both with newer and more established methods. It is, of course, possible to make minor criticisms regarding arrangement of subject-matter: poliomyelitis surely deserves a place among the specific infectious diseases due to filter-passers. And one of the lessons of the present war, that the infection of typhus is carried by lice only, is not emphasised. The limit, too, of compression is reached in such a sentence as (describing artificial pneumothorax): "The gas is at first rapidly absorbed, and hence must be reintroduced at increasing intervals." There are a few slips: T.O.A. is not the symbol for old tuberculin. But these are minor blemishes in an otherwise excellent handbook.

CURRENT GERMAN MEDICINE.

Effect of the War on the Birth-rate.

THE effect of the war, according to Dr. G. Mamloch's reading of the recent German official returns (*Deutsche Medizinische Wochenschrift*, No. 38), began to make itself felt on the birth-rate in the second quarter of 1915. The number of live births in the total of 26 German cities of over 200,000 inhabitants fell from 66,032 in the first quarter of 1914 to 42,723 in the last quarter of 1915. For the whole year 1915 the total was 49,749 less than in the previous year, a reduction of 19.3 per cent. This percentage diminution was highest in Chemnitz (27.2), Nürnberg (27.1), Hamburg (23.6), and lowest in Mannheim (14.2), Berlin-Schöneberg (13.1), and Kiel, where it only amounted to 7.5. In Berlin itself the deficit of births was proportionately vastly greater than in the war years 1870-71. Some of this diminution in the number of live births was made good by a reduction in the infantile death-rate, which was 14.0 in 1915, reckoned on 100 live births, as compared with 15.3 in 1914. Such a low infant mortality figure as that of the war year 1915 had never previously been observed in Germany. A number of towns certainly showed high figures—e.g., Königsberg, 19.6; Magdeburg, 19.5; Danzig, 19.2, doubtless owing to their unfavourable proximity to the war area; while seven towns showed a figure below 12—viz., Hanover, Dresden, Frankfurt-on-Main, Düsseldorf, Hamburg, Stuttgart, and Bremen.

Issue of Food Certificates to Invalids.

The Berlin correspondent of the *Münchener Medizinische Wochenschrift* (No. 39) describes the recent experience with the issue of food certificates to invalids in Berlin. The intention was, where food-stuffs in general were short, to prevent patients from suffering. A schema had been drawn up, to be filled in by the medical attendant, giving in addition to personal details, diagnosis, complications and duration of the illness, the harm which might be expected to follow from not obtaining the particular nourishment (milk, eggs, butter, meat, flour) and the period for which special nourishment was required. This schema was to be obtained by the patient from the dépôt for invalid food, and handed by him to his doctor to fill in, the latter posting it direct to the dépôt. In special cases an urgent mark could be made on the envelope. The plan was well thought out for the following reasons: (1) It did not oblige the doctor to disclose to the patient the existence of a serious illness; (2) the distribution was to be made in proportion to the available supply and the severity of the illness; and (3) any displeasure for refusal fell not on the certifying doctor but on an anonymous committee. But the plan pre-supposed intelligent coöperation on the part of the public, and this unfortunately did not occur. The first announcements had hardly appeared in the press when everyone discovered an illness or recollected one from which he might have suffered years before and for which a nourishing diet had been prescribed. It was quite remarkable, says the correspondent, how in the summer months, in which as a rule the average health was good, the sickness returns suddenly rose, and even consulting rooms which were normally empty became filled to overflowing. The task for

the Berlin doctors, he adds, became a highly laborious as well as an invidious one. Some 70,000 certificates were presented in central Berlin alone to be filled in. The correspondent concludes with the remark that it would have been simpler to give up the use of milk and butter altogether than to carry through the scheme.

Recent Work on MSS. of Hippocrates.

Notwithstanding the manner in which the energies of Germany must be absorbed by the war her classical scholars are still publishing the results of their researches, and this is especially the case with regard to ancient medical literature. During last year Messrs. Teubner, of Leipsic, produced two more important volumes of the great Corpus Medicorum Græcorum. The first was the work of a trio of editors, Herren H. Diels, who some years ago edited the papyrus manuscript known as the Iatrica in the British Museum, and J. Mewalt and J. Heeg. This volume contains Galeni in Hippocratis Prorrheticum I. Deomate Secundum Hippocratem. In Hippocratis Prognosticum. Freiderich Marx has been responsible for the other work, which is the first volume of Celsi A. Cornelii, and has one plate. In the philological journal, *Hermes*, several essays have appeared augmenting our knowledge of the Hippocratean corpus. One of these concerns the collection of fragments of his *περί ἐπιδουάδων*, which were discovered at Venice some years ago by Herr Helmreich. Seven of the best preserved of these are now published, together with their corresponding Latin paragraphs in Littré's edition of Hippocrates, where the whole Latin recension of the book is

printed. This Latin text is, however, such a poor one that some editors prefer to give for this work only the numerous Greek fragments known, making these from Venice a welcome addition. Herr Helmreich shows that the lost complete Greek text was still extant as late as the seventeenth century. Meanwhile, the Egyptian papyri are perpetually rendering up portions of this famed author, and the Italian School of Papyrology has just brought out its first volume of new classical literature which contains solely "*Hippocrate, Aforismi*," and so will increase our knowledge of the correct original text of this book.

The most important study of a work of Hippocrates is by Herr F. Jacoby, who endeavours to restore the original text of the *περί Ἀέρων, Ὑδάτων, Ὠρίων*. This he strives to achieve by eliminating what he believes to be early additions, and later interpolated marginal glosses which in time have been foisted into the true text. He also describes several errors arising from manuscript transmission. He shows that the original work almost certainly terminated at Chapter XXIV. This work has been added to by someone familiar with Scythia and Greece, and these additions were made before Aristotle's time, because he knew of them. The first half of the treatise, concerning diseases induced by various climates, and the second moiety, relating to the effects of climate upon racial characters, are both by the same author. Valuable notes concerning this frequently quoted work, which may be said to be the precursor of modern ideas of the influence of climate upon history, as to its utilisation from the time of Aristotle and Galen, complete this interesting study.

New Inventions.

A NEW SPLINT FOR FRACTURED HUMERUS.

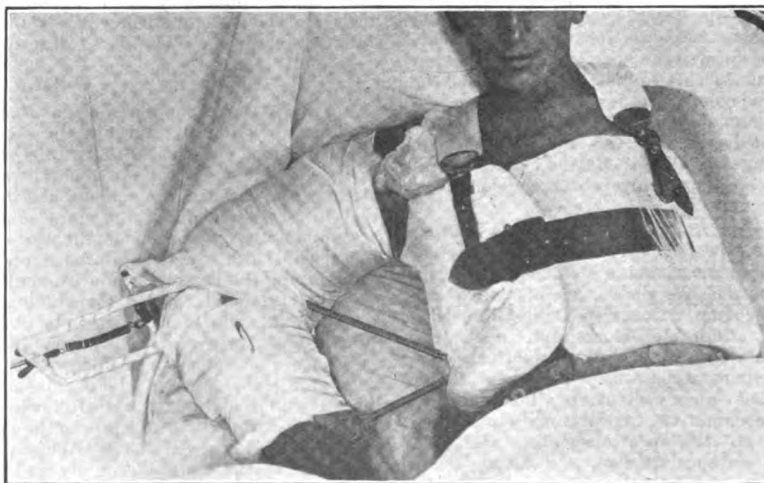
THE splint here illustrated is designed for cases of compound fracture of the humerus, and is a modification of Middeldorpf's triangle. The drawback of the latter is that it does nothing to neutralise the pull of the deltoid muscle, and, secondly, that it has a marked tendency to slip obliquely on the body.

The material of the splint is perforated zinc sheeting with $\frac{1}{8}$ inch holes. The body-piece is in halves, with a wire rod to serve as a hinge; the removable hinge makes the splint more manageable in padding it and for storage. The edges are stiffened by soldering on wire. The body-piece is fastened by a broad leather strap and buckle, with a brace over each shoulder buckling to the anterior edges. The arm-piece is fixed horizontally by a short strut of copper tubing near the axilla (in the illustration this is concealed by a bandage), and a longer strut fixed just above the elbow, the lower ends of both being soldered to the side of the body-piece. The forearm-piece is fixed at rather less than a right angle to the latter by a third strut placed horizontally. The edges of both arm-pieces are stiffened by wire, and if the wire were turned medially at the wrist its ends could be soldered to the chest-piece and thus replace the copper strut. The wire edging of the arm-piece is turned downwards at the axilla and soldered to the chest-piece below the upper edge, giving additional rigidity. Beyond the elbow

this wire is prolonged in a square loop a foot long with a ring at its centre. Above the elbow a stirrup is fixed by strapping, and extension is obtained by a spring fixed to a ring in the stirrup and at the outer end to a threaded rod passed through the ring on the square loop and tightened by a thumbscrew. This spring can be replaced by a rubber cord or by bandages. The limb is merely bandaged on the splint.

In the case illustrated the wound is on the outer side of the arm. When a dressing is required on the inner side the only change necessary is to have a trap-door cut in the zinc of the arm-piece.

The advantages I claim for this splint are: (a) The deltoid is thrown out of action, since the arm is held so high and the elbow with the lower fragment is immobilised by the forearm-piece. (b) As the splint goes completely round the thorax it cannot tilt from the weight of the arm. (c) The spring allows extension to any degree thought necessary — the one illustrated can be tightened up to 10 pounds' resistance; it does away with the inconvenience of having a weight dangling and swaying over a pulley. (d) This splint weighs



2lb. 15 $\frac{1}{2}$ oz. without padding. The patient was able to be up the day after it was applied, a stage which had been impossible for him with any other apparatus used in his case.

The splint was made according to my instructions by the engineer of this hospital. For the photograph I am indebted to Sergeant Brailsford, R.A.M.C. I have to thank Lieutenant-Colonel Gilbert Barling, consulting surgeon, Southern Command, for permission to forward this note for publication.

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THE LANCET.

LONDON: SATURDAY, OCTOBER 28, 1916.

The Position of Practice under the Insurance Acts.

THE Conference of representatives of Local Medical and Panel Committees from all parts of Great Britain, which met on Thursday of last week, had a heavy agenda paper to get through, and it was only by severe economy of time and concentration on major points that the meeting was able to break up before midnight. Discussion chiefly centred around the draft agreement for 1917 with the Insurance Commissioners, the question of collective bargaining, and that of panel practice in munition areas. With regard to the new regulations in the 1917 agreement, the feeling was general that it was neither fair to the practitioners absent on active service, nor to their colleagues doing double duty at home, that substantial alterations should be made in the panel practitioners' agreement with the Commissioners. The only alterations which panel practitioners could accept were such as were actually due to war emergency. Two departments of practice were recognised by the Conference as dictated by emergency: one, the scheme of the Local Government Board for control of venereal diseases, a proposal which emerged complete and perfect from the depth of the Government bureau without foreknowledge on the part of the Insurance Commissioners; the other being the treatment of disabled sailors and soldiers invalided out of the Services. In the case of the former the Conference, after a very full discussion, found itself prepared to adopt, in the words of the new regulations, "such steps as are reasonably necessary to enable the patient to take full advantage" of medical services provided by a public authority, but decided to limit this acquiescence to the Local Government Board scheme for venereal diseases, and to considering, if necessary, any further schemes on their own merits when they should arise. The position of the panel practitioner remains, as heretofore, a secure one, in that no public authority of whatever kind is in a position to dictate to him his duties in regard to any local scheme. The practitioner is only required to take such steps as seem to him and his local medical committee reasonably necessary, being responsible in the final issue to the Insurance Commissioners.

With regard to the treatment of disabled sailors and soldiers, which seemed in the second year of the war likely to attain to prodigious dimensions, it is understood that strong pressure is being brought by the Central Medical War Committee, the Committee of Reference of the English Royal Colleges, and the Insurance Acts Committee of

the British Medical Association, upon the War Office to postpone the discharge from the Service of any disabled man until his treatment had been carried through so far as to render him as useful a citizen as he could become. In this way, when discharged, the disabled ex-Service man, although a damaged life, should no longer require the amount of constant medical supervision from his panel practitioner which by anticipation had given rise to wide apprehension. When the position had thus been made clear the Conference decided to accept alterations in terms of employment with regard to the two departments of practice specially affected by the war, and to do so not grudgingly but as a tithe of the war service which panel practitioners were prepared gladly to render to the country. Whereas in controlled businesses generally profits had risen in proportion to the work done, this was not the case with the medical profession, whose arrangement with the Insurance Commissioners was precisely on the same terms as in pre-war times. At the end of the war this patriotic action on the part of panel practitioners should receive proper acknowledgment by the Commissioners. Far from being unwilling to enter upon any new schemes and developments in regard to panel practice, the Conference definitely decided to adopt a constructive policy for its action after the war, and to call upon the Insurance Acts Committee to draft a model scheme for a complete medical service for insured persons.

The question of collective bargaining between the British Medical Association and the Insurance Commissioners was discussed, and the recommendation made that three months' notice should be given to the Insurance Acts Committee of the Association of any prospective alterations in the agreement for the coming year, the Committee in its turn handing down to the Panel Committees the propositions at the earliest moment at which this could be done without breach of confidence. It was agreed that Local Panel Committees must be left free to make their own special arrangements with the Local Insurance Committees, and that it was not desirable to enforce any stereotyped scheme upon them. The formation of a trades union to enforce the collective interests of the panel practitioners upon Insurance Committees did not command the assent of more than a few of the representatives. It was very generally felt that the relation in which the medical profession stood to the various branches of the Insurance Commission was one which enabled them to obtain all that the trades unions would be only too glad to obtain for themselves. Two recent cases in the law courts, in which disputes between the doctor and his Insurance Committee had been decided in favour of the doctor, served to show that there was a practicable appeal even against the State as employer.

The third matter claiming the attention of the Conference was the question of certain conditions of panel practice in munition areas. The subject was dealt with in our leading article last week, our anticipation being based on the Memorandum issued by the Insurance Commissioners after conference with the Insurance Acts Committee of the

British Medical Association. The situation here was greatly improved by the interchange of question and answer which took place at the Conference itself, when several of the Commissioners, including Sir ROBERT MORANT and Mr. J. ANDERSON, came to the Conference ready to answer questions of fact as they were put to them. This privilege was made full use of and the answers received were such as to dispel certain of the misunderstandings and misgivings felt by panel practitioners in regard to the collection and distribution of the funds of the Insurance Commission. It became clear to the Conference that any increase of the insurance funds in the munition areas could only be obtained at present by a corresponding diminution of the funds in other areas. The extent of munition areas grows, and in many where actual numbers on the panel have not become greater, the increase of disablement, as well as the shortage of medical men, make the conditions of all panel practice exceedingly responsible and arduous. The representatives of the munition areas felt themselves, therefore, scarcely justified in pressing for favoured consideration in these circumstances. At the same time the Commissioners admitted that if there was to be any large efflux of completely or partially disabled men from the services it would be equitable to modify the formula on which medical benefit was calculated, and this is, in fact, having the careful and immediate attention of the Commission. These were the more important points discussed at the Conference, the whole of whose varied deliberations were of intense interest. The prevailing note of the meeting was one of intention on the part of panel practitioners loyally to carry out their obligations to their constituencies in a time of grave difficulty and pressure.

Economy of Time in Civil Medical Practice.

WE hear from many parts of the country that practitioners are overworked to the verge of breakdown, and, in spite of every effort, are unable to meet the demands upon their time. We know of one county with a fair-sized county town and for the rest only large villages and rural districts, in which the remaining medical practitioners are so thinly spaced out that the position would seem untenable if any single one of them were to become incapacitated. We have met the secretary of a local Medical War Committee, instituted for a large urban district, who had come up to London expressly to make representations to the Central Medical War Committee that one particular panel practitioner could not be spared and must on no account be granted a commission. And we chronicled a week or two ago the position of another large urban district in which the strain on medical men was such that they had hardly time to break bread. These things may be exceptions and not real samples of a general state of affairs. We take that view. There is still a thin margin in the majority of places between what can just be

done and what cannot possibly be done, otherwise the following alternatives would be before us: either the number of civilian practitioners must be increased, or the amount of work they have to do must be diminished, or the method in which the work is done must be rearranged.

We may dismiss the first two of these alternatives. Medical men, unlike poets, are the outcome of education and are not born instinct with pathological wisdom; and the amount of work that they must do cannot be controlled, for they will always accept it as their duty to perform all that lies within their conceivable scope. But the third alternative, the rearrangement of the civil practitioners' work, so that greater economy of time and of effort is secured, appears to come within the range of practical endeavour, in which case there is nothing panicky in giving timely consideration to the way in which such economy could be effected. A little forethought now might save huge friction in a few months' time. The medical work of general practice varies in urgency. On the one hand are accidents, cases of infectious disease and of acute illness of various kinds. At the other extreme are the illnesses of neurasthenics and the duty calls to patients, who are prevented in many instances from becoming more seriously ill owing to the confidence which they feel in their medical advisers. This latter class of practice has been profoundly modified during the war. Not only have medical men been unable to find time to pay their less urgent visits, but the atmosphere of this country, now seriously at war, has been uncongenial to the development of imaginary or "functional" disabilities. War has proved the capable doctor for such patients and has prevented rather than cured their conditions. It is openly stated in Berlin that when more than half of the medical men were called away at the outbreak of war those that remained had less to do, and this was accounted for by the disappearance of minor and especially of "functional" ailments. In our country such complaints as migraine have diminished in a remarkable degree, and this alone has sensibly relieved the practitioner. But the war should not be depended upon to do all the necessary reforms, and there are many directions in which the conduct of civilian practice could be made far easier by organisation. It has been suggested that the insured patients should be required to pay an extra fee for every call made between the hours of 10 P.M. and 6 A.M.; the surest way to check the thoughtless is some reasonable fine commensurate with the unnecessary visits, and when the public understands the absolute necessity of safeguarding the doctors' time we have no doubt whatever that this view will be taken. We think, however, that it should be always optional for the medical man to exact or remit this extra fee, ensuring that it should only be paid when the call might either have been made earlier in the day or have been delayed until the following morning. This is an idea that might be developed, and in many other ways coöperation could be instituted among medical men, with added convenience to their patients and with a great saving of time and

trouble to themselves. But, unfortunately, most schemes whereby medical men can help each other through some rearrangement of work must be confined to urban districts; medical practice in the country presents little opportunity for flexibility.

Where the work cannot be diminished or the strain be relieved by any methods of give and take between medical men it becomes the imperative duty of every medical man to see that he does not become over-wrought in doing his duty. Where there is a prospect of relaxation ahead pressure of work may be tolerated for a while, but continued strain only too often leads to breakdown, and breakdown may, in the present depleted state of our professional ranks, result in the dislocation of the practice of a whole county. Much doubtless may be done by deputing the non-medical part of the work to those who can do it equally well—the arrangement of notes and letters and the dictation of correspondence are obvious instances. Concentration on the essential parts of practice is very necessary. There is a movement on foot in Canada, of which a paper by Dr. F. B. GILBRETH in the *Canadian Journal of Medicine and Surgery* for July, 1916, was an index, to investigate the hospital from the standpoint of efficiency by means of the same methods of study as have been applied to great industrial concerns. Dr. GILBRETH finds that although the experience and skill of the hospital officer are of a very high degree, there is much lost in the application of them to the patient by the inefficient, indirect, or complicated modes of transference. Something of this obtains in our civil medical practice, and the medical practitioner must be on his guard in these times, when there is not more than enough of his skill and experience to go round, to see that his efforts do not get used up unavailingly, or fail to reach his patients unimpaired.

Annotations.

"Ne quid nima."

PRACTICAL INSTRUCTION IN THE DIAGNOSIS AND TREATMENT OF VENEREAL DISEASES.

THE practitioner who wishes to keep abreast of the movement for radically dealing with venereal diseases will need some opportunity of practical instruction in their diagnosis and treatment unless he has already been in a favoured position in this respect. The instruction naturally divides itself into the methods of obtaining materials for diagnosis and the methods of administration of remedies when the diagnosis has been established. The taking of the materials is the smaller affair, but still of great importance. At institutions where it is done systematically the technique looks so simple that the onlooker may fail to appreciate the pitfalls which exist for the unwary. He must therefore lose no opportunity of practising the methods himself and of acquiring the "laboratory fingers" which are essential to success. To take a smear from the urethra for the detection of the gonococcus is not difficult. To procure a specimen of serum in a capillary tube from a suspected syphilitic sore demands a little care. When the report on this serum is negative the

obtaining of some juice from a lymphatic gland draining the suspect area is required, and in this manœuvre the prospect of success is much enhanced by the injection of one or two cubic centimetres of saline into the gland, which is massaged before the sample is withdrawn. Practical methods such as these must be seen to be appreciated, as well as the venipuncture and lumbar puncture to obtain the fluids for the Wassermann reaction. At this stage, the materials being obtained and sent up for report, the practitioner can, if he choose, leave the matter. But if he does so he will never share in Schaudinn's joy when he first saw the *Spirochæta pallida*. As may be read in Neisser's obituary notice in another column, this great discovery, to which he had approached so close himself, was made in his laboratory during his absence in Java. Finally, the technique of administration, both intravenous and intramuscular, of remedies in syphilis requires little apparatus or technical skill, but rather the strict observance of details, many of which can only be learnt by practical experience, and rapidly learnt in places where the methods are practised in routine on a large scale. Under these conditions the intramuscular injection of mercury almost suggests a very well-ordered circus, and the administration of 50 intravenous doses of salvarsan or luargol can be covered in an hour and a half in a room large enough for three recumbent patients. For the neosalvarsan, which is at present the only colloid arsenic preparation which can wisely be administered intramuscularly, we are still unfortunately dependent upon captured supplies. In large centres where arrangements for treatment already exist the practitioner can—as we have noted is the case in London—obtain his practical instruction before the clinics under the new scheme are instituted, and he will be well advised to do so. The chairman of the London County Council stated at the recent Mansion House meeting that the complete scheme for London and the Home Counties should come into force early in the new year. In other centres, where building, equipment, and pathologist must first be found, some delay is inevitable, but should, in the interests of everyone, be made as short as possible. We welcome, therefore, the early appearance of a scheme such as that of the borough of Portsmouth, and shall hope to give from week to week the essentials of this and other schemes in so far as they include novel methods and arrangements.

ANÆSTHETICS IN MILITARY HOSPITALS.

VARIOUS correspondents have addressed us lately upon the choice of anæsthetics and of methods by which they shall be administered in military hospitals. There are several reasons why the question cannot be answered exactly along the lines of ordinary practice. The principles according to which anæsthetics and methods are selected remain the same as in civilian hospital practice, but the personnel of the patients introduces new features. Thus, to some extent in base hospitals abroad, and to a very large extent in the military hospitals here, the patients are young men in first-rate condition. They are, from the anæsthetist's point of view, difficult subjects because of their muscularity and fitness. On the other hand, large numbers of the patients in the military hospitals nearer the fighting line are men in a condition of shock, of exhaustion, or of serious sepsis. To anæsthetise such patients is never difficult; the difficulty is, on the other hand, not to add to their damage. The contrast between the two classes may be stated

broadly as being that the first are anæsthetised with difficulty but recover with ease; the second are easily anæsthetised but much more likely to suffer afterwards. It is particularly in the case of the latter, men who are bodily and perhaps also mentally greatly depressed or suffering from septic poisoning, that some of the newer methods of anæsthesia are very valuable. It is in these cases that intravenous administration of ether or of alcohol, or prolonged administration of nitrous oxide combined with preliminary morphia and atropine, are often to be preferred to simpler and older methods. In such cases chloroform is particularly undesirable, as Colonel J. Campbell points out in our issue of Sept. 30th, and we would add a caveat against the adoption of this anæsthetic as a routine amongst the healthy patients of the other class alluded to. It would be a pity if the comparative convenience of this agent were allowed to weigh against its undoubtedly easier association with danger in the selection of a routine anæsthetic. Where the administrators are men of wide experience the anæsthetic and the method become of less importance. As one of our correspondents writes, "it is not the anæsthetic, it is the way it is given," and this is of course very true; but in making suggestions that may be widely followed we must bear in mind that many of those who may follow them are bound, in the nature of the case, to be men to whom anæsthetic work has not hitherto fallen in large quantity. For them the first essential is to secure safety, and for that purpose their mainstay must be ether. It is probably the comparative tediousness of induction by the open method in the case of strong healthy men, and the difficulty often of maintaining complete relaxation, that turn the commencing anæsthetist from ether. Here we may draw attention to the use of ethyl chloride in the course of induction, and support the suggestion of one of our correspondents that this agent might with advantage be much more frequently employed. Moreover, in induction in strong subjects the administrator need not hold himself academically bound to a pure open method; such patients will suffer no inconvenience, and everybody else concerned will be greatly relieved, by a brief use of the wide-bore Clover.

A NEW FORM OF X RAY TUBE.

In a supplement to the *Scientific American* there is a description of a new form of X ray tube that may prove to be an improvement on that introduced by Mr. Coolidge. The essentially new feature is that the filament producing the necessary electrons, instead of being in the centre of the cathode itself, is mounted in an accessory bulb placed immediately behind the cathode, the latter being provided with a central hole through which the electrons from the filament are made to pass. This hole being a small one the electrons fall on the anticathode in a correspondingly small dense bundle giving a sharp focal point from which the X rays emerge, and an almost complete freedom from stray radiations, which are more or less common to all tubes and a constant source of danger to all X ray workers. If the claims made for this Lilienfeld tube are borne out in practice there is no doubt that it will be a considerable improvement on anything that has been available up to the present, though the necessity for an auxiliary current to heat the filament still remains as in the Coolidge tube. We gather that the idea is of German origin, and further developments may not occur during the continuance of the war.

SOME ASPECTS OF THE THROAT AND NASOPHARYNX IN THEIR RELATION TO GENERAL MEDICINE.

In the presidential address delivered by Dr. Arthur Saunders to the West London Medico-Chirurgical Society on Oct. 6th, the throat was considered as a site of systemic general infection. He drew attention to some of the forms of catarrhal inflammation of the nose and throat, which, though at first mild in degree, might constitute if neglected a direct danger to health—nay, even to life—as well as to some of the more severe infections originating in those regions. But, even apart from such severe infection, acute inflammation of the adenoid tissue of the naso-pharynx is far from uncommon, especially in children, producing high fever and perhaps rigors, severe frontal and occipital headache, and even collapse. In the absence of any complaint of the throat the true nature of the condition may easily be overlooked, but a careful examination of the pharynx and naso-pharynx will usually disclose the cause of the symptoms. The lymphoid tissue of tonsils and adenoids which have undergone chronic irritation from infection is left damaged and impaired to resist a future invasion. Moreover, a morbid condition of the mucous membrane of the fauces affords a more suitable soil for the development of many infectious diseases. Dr. Saunders especially referred to diseases which, constantly occurring in this country as sporadic cases, occasionally assume a virulence and infectiousness which lead to their distribution in epidemic form such as cerebro-spinal fever and acute poliomyelitis. Investigations as to the prevalence of "carriers" in the distribution of cerebro-spinal fever, especially when the disease is epidemic, have brought out some remarkable facts. It would appear that at least in epidemic times the number of carriers who do not themselves become infected with the disease is very large. There appear to be grounds for the belief that chronic catarrhal conditions of the naso-pharynx may be associated with the persistence of the "carrier" condition. Dr. Saunders is of the opinion that this last sentence contains the expression of a more general truth than is suspected, and that close investigation and a wider experience will show that catarrh of the mucous membrane *does*—the italics are Dr. Saunders' and we adopt them—favour the reception, persistence, and multiplication, with consequent increased opportunity and incidence of infection, in the case of cerebro-spinal fever, as in diphtheria and probably many other diseases. Dr. Saunders is of the opinion in acute poliomyelitis again there is little doubt that the throat and naso-pharynx are one of the chief sites of entrance of the virus into the system. From what has been said it follows that by keeping the mucous lining of the throat, the naso-pharynx, and the mouth generally, healthy much can be done in the prevention of disease; and by prompt attention to local lesions and unhealthy conditions much can be done for the prevention of greater ills. Dr. Saunders urges fresh air and well-ventilated rooms, as well as the possession of what one may call a well-ventilated pharynx as important factors in the preservation of health. To these ends enlarged tonsils and adenoids undoubtedly should be removed in all cases where symptoms of obstruction, whether faucial, naso-pharyngeal, or Eustachian, are being produced. Tonsils, if diseased, although not obviously enlarged, especially if the infra-maxillary glands are chronically

enlarged, or if frequently the site of acute inflammatory attacks, should be removed. As infective organisms are frequently to be found in the deepest portions of the gland the method of removal should be complete and by enucleation.

BORIC ACID IN CREAM.

THE amending Order in regard to milk and cream regulations issued last week by the Local Government Board places the question of the use of boric acid as a preservative of cream on a definite basis. The regulations hitherto permitted the use of boric acid in cream so long as the presence of this preservative was declared, but there was no limit laid down as to the quantity of boric acid added. The amending Order, while still requiring a "declaratory label," does not permit the use of more than 0.4 per cent. boric acid by weight of the preserved cream. The Order also requires that the label on the cream so preserved shall bear the words "not suitable for infants or invalids." In the case of hydrogen peroxide being used as the preservative, the label is required to be drawn up in the same terms, but then no statement is demanded as to the quantity of the peroxide present.

THE OUTBREAK OF ACUTE POLIOMYELITIS IN NEW YORK.

UP to the last available date of record there have been in New York City and the adjacent States of New York, Connecticut, Massachusetts, New Jersey, and Pennsylvania the following number of cases and deaths:—

| | Cases. | Deaths. |
|--|--------|---------------|
| New York City (Sept. 30th) | 9,029 | 2286 |
| New York State, exclusive of New York City (Sept. 14th) | 2,785 | 318 |
| Connecticut (Sept. 18th) | 677 | Not reported. |
| Massachusetts (Sept. 19th) | 671 | 95 |
| New Jersey (Sept. 19th) | 3,495 | 775 |
| Pennsylvania (Sept. 20th) | 1,278 | 313 |
| | 17,935 | 3787 |

Amid all the ignorance as to the means of distribution of the virus, and the inconsistency of experience in different epidemics, climates, and continents, two facts in relation to medical experience in New York City stand out with striking clearness. They have been pointed out to us by Dr. Haven Emerson, Commissioner for the Department of Health in New York, who writes as follows:—

1. We have had no case among the 30,000 children in institutions for orphans, &c., in New York City. By institutions I do not mean hospitals or such places as day-nurseries, but the permanent homes of children outside of families. These institutions are under the supervision of the Department of Health, and we excluded all visitors at the beginning of the epidemic and maintained as usual the two weeks' quarantine for all children on admission—i.e., two weeks for isolation and observation before admission to the general living rooms, dormitories, and dining rooms. These institutions have the same water, pasteurised milk, and the same food as other children. They are no more protected against flies and mosquitoes, but are probably less afflicted with fleas and bed-bugs than many poor homes. Not a single case up to date, and the children are of all the most susceptible ages.

2. No case has been found on Barren Island, an island in Jamaica Bay, Borough of Brooklyn, where 1300 people live, and upward of 350 children. All city garbage is rendered on the island, also all dead animals are reduced to their commercial elements. There is no general water-supply; the water is from shallow wells. No sewerage, no roads, no local garbage removal, little good sanitation in or out of homes, abundant flies and mosquitoes, and an ignorant population of low-grade Poles, Italians, and coloured people working in

and about the rendering plants. They are geographically and socially isolated from all but the rarest contact with the rest of the city.

It is obvious from the experience in New York and elsewhere that many of the facts upon which an intelligent and logical sanitary control of acute poliomyelitis can be based are still to seek.

PETECHIAL ERUPTIONS IN CAMP FEVERS.

DURING the present campaign attention has been drawn to the frequency with which signs of cutaneous hæmorrhage are met with in troops at the front during various infectious diseases, especially typhoid fever, giving rise at first to serious doubt as to the differential diagnosis from cases of typhus. Last August, while inspecting a sanitary station where troops from various sectors were concentrated, Dr. G. d'Ormea and Dr. M. Segale¹ found five cases with symptoms of severe typhoid and a diffuse petechial eruption which appeared between the fourth and fifth day from the apparent onset of the disease. These subjects had been inoculated against typhoid. Blood-cultures were made in three of these patients: in one the organism of paratyphoid B was isolated, in another typical colonies of *B. typhosus*; the third culture gave a negative result, probably owing to lack of sufficient material. In two of these cases positive evidence of typhoid enteritis at the middle of the second week was found. The same observers, working in another part of the front, noticed, in a large number of necropsies, frequent manifestations of cutaneous hæmorrhages more or less extensive in patients dying not later than between the tenth and fifteenth day of a disease which clinically ran the course of a continuous or subcontinuous fever. The necropsies and bacteriological investigations in these cases confirmed the presence of typhoid, in a large number with typical forms of Eberth's bacillus and sometimes with that of paratyphoid B. These cases, although not very numerous, were sufficiently striking, since they led to the suspicion of petechial typhus, and were, on the contrary, ordinary typhoid, often severe, in both inoculated and non-inoculated or cases of paratyphoid B. Petechial eruptions in typhoid are of extreme rarity in ordinary civil practice, and their occurrence with relative frequency in camps leads to the supposition that there are certain conditions inherent to the surroundings which favour their occurrence, the most probable explanation being that they are connected with hæmovascular instability consequent on a defective régime to which soldiers are exposed, without excluding as contributory causes over-exertion and nervous exhaustion. Widal in 1915 insisted on the absolute necessity of serological examination before diagnosing petechial typhus in order to exclude error with regard to typhoid, and Dr. d'Ormea and Dr. Segale emphasise the same point. They also draw attention to the analogy between these petechial forms of typhoid and the cases of diarrhoea and trench nephritis as having some probable relation to the diet of soldiers at the front, which contains an excess of animal food in proportion to cooked or raw vegetables.

THE autumn session of the General Council of Medical Education and Registration will commence at 2 P.M. on Tuesday, Nov. 28th next, when the President, Sir Donald MacAlister, K.C.B., M.D., will take the chair.

¹ Giornale di Medicina Militare, May, 1916. Tipografia Enrico Voghera, Rome.

MEDICINE AND THE LAW.

A Serious Baby-farming Case.

AT the recent session of the Central Criminal Court a woman named Richardson was sentenced to five years' penal servitude, after pleading guilty to charges of theft and of obtaining by false pretences sums of money from three persons who had entrusted infants to her care. The practice of the prisoner in connexion with baby-farming was to receive a substantial sum upon the undertaking that she would take care of a child, and then to get rid of the infant to someone else with little or no cost to herself. In one of the cases before the court she had received £8 from the mother, an unmarried woman, and on the same day had left the baby with another woman asking her to look after it for an hour or two, but had never returned for it. In another instance a charge of manslaughter had been brought against two women with whom she left a child which soon afterwards died, but the women were acquitted. In the third case the infant had been received by the prisoner, who had agreed to look after it, but the child had disappeared and she had refused to give any information by which it could be traced. The attention which at the present time is being directed to the importance of the preservation of the lives of infants lends additional interest to such cases, and the police are to be congratulated upon having put a stop to Mrs. Richardson's activities for some time.

The Property in a Prescription.

Points of considerable interest to the medical profession were raised in a recent action brought in the Honiton county court against Messrs. Hinton and Lake, a firm of druggists at Sidmouth, by Mr. H. Le Brasseur. The plaintiff's wife consulted Mr. C. W. Grant-Wilson, who gave her a prescription which she took to the defendants to be made up. The prescription was not returned to her, and her husband asked that it should be, but his request was refused, the defendants saying that they had undertaken, at the request of Mr. Grant-Wilson, not to return his prescriptions to patients unless he expressly authorised them to do so. In the case in question Mr. Grant-Wilson refused to allow the prescription to be returned, but afterwards enclosed a copy of it to the plaintiff when sending him a receipt. The plaintiff claimed the return of the prescription, or 15s. as its cost. Mr. Grant-Wilson, in his evidence, stated that the course adopted by him with regard to prescriptions was taken for the protection of the public, and he illustrated the danger of allowing prescriptions to be retained by the patient by saying that not infrequently a medicine ordered for an adult was given, without any medical man being consulted, to an infant. He had requested druggists to inform him whenever a patient asked for the return of a prescription, and he made a practice of writing on prescriptions which might properly be handed back without question the words, "Return to patient." The solicitor for the defendants pointed out that the prescription was of no value to them and that they were only contesting the case on the question of principle and in order to keep faith with the medical profession and with Mr. Grant-Wilson. His honour Judge Lindley held that no property in the document had passed to the plaintiff, as the prescription had only been handed to the patient in order that it might be conveyed by her to the druggists to be made up instead of the medical man himself sending it. The action therefore failed and the claim was dismissed with costs.

R. v. Burdee.

This case, in which, as already noted in THE LANCET of Sept. 16th, p. 531, an unqualified person, Henry Burdee by name, was sentenced to 12 months' hard labour for manslaughter after having "medically" treated a woman who died in consequence, came before the Court of Criminal Appeal recently. It will be remembered that Burdee applied a so-called "cold-water cure" combined with starvation to his unfortunate patient without having made any examination to assure himself that she was fit to undergo such an ordeal, and that the medical evidence showed that death was due to disease of the heart accelerated by lack of food. After hearing argument to the effect that there was no evidence of such gross negligence or criminal inattention

as would justify a conviction for manslaughter, the court reduced the sentence to 12 months' imprisonment in the second division, but held that there was ample evidence to support the conviction. Mr. Justice Darling in delivering judgment said that if a person, whether a qualified medical practitioner or not, professed to deal with the life or health of any person, he was bound to have competent skill to perform the task. The convict held himself out as qualified to perform certain work, and he was bound to treat his patients with care and attention. The appellant had no medical knowledge and the evidence showed that he was ignorant of anatomy. He had a stereotyped treatment which he advised without any consideration of the patient's condition. The conviction must therefore stand. The conclusion thus arrived at must be regarded as satisfactory, and the case is likely to be cited upon similar occasions for some time to come when a quack undertakes the treatment of a patient who dies. It is to be regretted that the negligence of an unqualified person treating disease is not likely to become the subject of a criminal charge under this precedent except in those cases in which death may be the result of his attentions. It is not for the sake of the medical profession that better protection is required, but for the sake of the public.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Royal College of Physicians of Ireland.

THE annual meeting of the President and Fellows of the Royal College of Physicians of Ireland was held in the College Hall, Kildare-street, Dublin, on St. Luke's Day (Oct. 18th). The following elections were made:—President: Dr. Joseph O'Carroll. Vice-President: Dr. H. T. Bewley. Censors: Dr. Bewley, Dr. Martin Dempsey, Dr. W. A. Winter, and Dr. B. Solomons. Examiners for the Licence to practise midwifery: Dr. E. Hastings Tweedy and Dr. Spencer Sheill. Additional Examiners to take the place of an absent Censor or Examiner: Medicine, Dr. W. Boxwell; Medical Jurisprudence and Hygiene, Dr. Falkiner; Midwifery, Dr. Spencer Sheill. Supplemental Examiners under the Conjoint Examination Scheme: Biology, Dr. Nesbitt; Chemistry, Dr. Ninian Falkiner; Physics, Dr. W. G. Harvey; Physiology, Dr. H. C. Earl; Anatomy, Dr. R. J. Rowlette; Pathology, Major F. C. Purser; Pharmacy, Materia Medica, and Therapeutics, Dr. George Peacocke; Medicine, Professor T. G. Moorhead. Examiners for the Conjoint Diploma in Public Health: Hygiene, Dr. S. T. Gordon; Bacteriology, Dr. Earl; Sanitary Law and Vital Statistics, Dr. Ninian Falkiner; Meteorology, Dr. J. A. Matson. Examiners for the Membership: Clinical Medicine, Dr. Bewley and Dr. Dempsey; Practice of Medicine, Dr. Winter and Dr. Nesbitt; Pathology, Dr. Earl and Dr. O'Sullivan; Obstetrics and Gynaecology, Sir Andrew Horne and Dr. Hastings Tweedy. Representative of the College on the General Medical Council: Sir John W. Moore. Representatives of the College on the Committee of Management: Dr. Walter G. Smith, Sir John Moore, and Dr. T. Percy C. Kirkpatrick. Treasurer: Dr. Bewley. Registrar: Dr. Kirkpatrick. Librarian: Mr. Robert Phelps.

The Royal Victoria Hospital, Belfast, and the War.

The inaugural address of the present session was delivered on Oct. 19th, in the hall of the King Edward VII. Memorial, to the students attending the clinics of the Royal Victoria Hospital by Professor J. A. Lindsay, who delivered a wise and spirited homily on the broad relations of medical men to the sick. At the close of the address the chairman of the medical staff of the Royal Victoria Hospital, Sir John Byers, referred to the part that the institution was taking in the present crisis. One hundred of the beds, he said, were being retained for wounded soldiers and officers. Six of the members of the visiting and auxiliary staff and 180 of their former students (many of them old house surgeons and house physicians) were now on military service, as well as three of the sisters and 17 of the nurses. Eight of the old students had been killed in action or had died when on service. Thirty-two distinctions had been conferred on members of the staff and former students. Of these, 18 were mentioned in despatches, 9 had obtained the Military Cross, 2 the D.S.O., 1 the C.M.G., 1 the C.B., and 1 (Major

J. A. Sinton, I.M.S.) the Victoria Cross. Among those mentioned in despatches was Lieutenant-Colonel Sir David Semple, who, since 1913, had been Director-General of the Public Health Department of Egypt. Miss Bostock, the lady superintendent of the Royal Victoria Hospital, has been decorated by the King with the Red Cross (First Class).

Irish Doctors of Military Age.

At a meeting of the Omagh guardians, held on Oct. 21st, a letter was received from the Local Government Board, to the effect that, whilst adhering to the principle already announced, not to sanction a doctor of military age to any position in the Poor-law medical service, so long as a practitioner of non-medical age was available and otherwise suitable for the duty, they had no option but to approve of the temporary appointment of Dr. D. F. Murnaghan in the Omagh No. 1 Dispensary District, as they were not in a position to suggest an alternative arrangement suitable to the exigencies of the case. They suggested that as the term of employment might be prolonged the guardians should arrange the remuneration at the fixed salaries attached to the medical officership, instead of £4 4s. weekly. The Board also signified (for the same reasons) their approval to the temporary appointment of Dr. Murnaghan as workhouse medical officer.

Oct. 23rd.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Preventive Treatment of Post-operative Peritonitis.

To prevent the occurrence of peritonitis after laparotomy in cases where septic foci are present M. Chaton employs a film of camphorated oil. His method is as follows. After opening the belly a certain quantity of camphorated oil is poured in and the patient placed in the position required by the operation; the incision is closed and a dozen inspirations allowed, after which the operative compresses are applied; these absorb any excess of oily fluid. The oil obstructs the lymphatic channels of absorption, hinders the adhesion of loops of gut, and permits of prolonged drainage, besides playing the part of a cardiac tonic. Ampoules of 25 and of 10 c.c. are employed, and 300 c.c. of a 1 per cent. solution of camphor can be used without inconvenience. The author has obtained encouraging results by this method.

Prevention of Tetanus by the use of Antitetanic Serum.

Before the Academy of Medicine M. Netter has laid stress on the services of antitetanic serum, recalling the excellent results obtained from its use in the United States of America. On the occasion of the jollifications which take place each year on the national fête in 1903 the number of wounded citizens amounted to 4449, and of these 417 acquired tetanus. Six years later in 1909, after the practice of antitetanic serum injection had been introduced, a larger total of casualties included only 150 cases of tetanus. During subsequent years the number of cases has continued to diminish, reaching zero this year. M. Capitan, in continuing the discussion, emphasised the advantage of high dosage. He considers that in severe infected wounds, or when a projectile remains embedded in the tissues, the usual preventive dose of 20 c.c. should be increased to 30 or 40 c.c., to be repeated in case of need.

A New Treatment for Gunshot Wounds.

Professor Pierre Duval, at present on active service, recently showed before the Society of Surgery a series of 12 men severely wounded on the Somme front. Although the wounds were such usually intractable ones as compound fracture of the knee, they had recovered in two or three weeks without fever, drainage, ankylosis, or plaster bandage, the healing of the wounds even taking place by first intention. These results, which much impressed his audience, were obtained by methods in complete contrast to those usually practised. With the shortest possible delay after the infliction of the wound M. Duval opens up freely the gunshot track, as well as all other tracks, cleans the surface with ether, and deliberately excises the whole wound, cutting for an extent of 1 or 2 cm. into healthy tissue. Renouncing, in short, antiseptics and any attempt to destroy the imported microbes, he treats the whole neighbourhood of the infected injury as he would a malignant tumour by simply removing

it. After finding himself in entirely healthy tissue he sutures the synovial membrane, reunites the ligaments, and brings together the edges of the wound without drainage. The results have been surprising; he has been able to dispense with bandages, irrigation, and the drainage of prolonged discharge. At the same time, the rapid return of function is very striking. One of the wounded men, who was already walking with the aid of a stick, had been hit on the knee three weeks before by a fragment of shell which penetrated the knee-joint, a type of wound which up till now has generally resulted in ankylosis when death did not supervene from a rapid infection. The method is one the wider application of which appears likely to modify considerably our treatment of gunshot wounds.

Treatment of Severe Burns.

M. Kirmisson also showed before the Society of Surgery four patients of M. Barthe de Sandfort treated with ambrine¹ for severe burns of the face, trunk, and upper limbs. The burns were seen to be supple and with little or no tendency to contraction. The mode of dressing employed by M. de Sandfort, thanks to which M. Michaux also obtained equally good results, had, above all, the advantage of suppressing or greatly diminishing pain and expediting cicatrization. M. Toussaint also reported excellent results with ambrine in the severe burns under his care.

A Medical Victim of the X Rays.

Dr. Ménard, the well-known director of the electro-radiologic service of the Hôpital Cochin, has just had his index finger removed, another victim amongst workers in the cause of the advancement of radiology and of the care of the wounded. Some little time before the war he had already lost the index finger of his right hand. M. Malvy, the Home Secretary, has just decorated him with the Legion of Honour, and by a decision dated Oct. 6th the War Minister has awarded him the gold medal of preventive medicine.

CANADA.

(FROM OUR OWN CORRESPONDENTS.)

Surgical Hospitals for Canada.

THE Canadian Hospitals Commission has now organised a system for convalescent returned soldiers. It is still, however, considered advisable for the Canadian Government, acting through the Commission, to establish surgical hospitals right across Canada. These hospitals will receive soldiers able to take the voyage across the Atlantic and relieve the pressure in England. Many who are to undergo operation could, it is thought, be safely transported here to receive the necessary surgical treatment, and there are yet many skilled surgeons in Canada at the cities of Halifax, St. John, Montreal, Ottawa, Toronto, Winnipeg, Vancouver, and Victoria, who would only be too willing to do their part in military hospitals established at home for this purpose. When this is included in the programme of the Hospitals Commission, Canada will be in a splendid position to deal with all classes of returned soldiers.

Acute Poliomyelitis in Ontario.

Infantile paralysis is spreading in Ontario. The provincial health authorities are considerably concerned, and are contemplating steps to deal more rigorously with the situation. It may be found necessary to close the kindergarten schools and the moving-picture shows to children under 14 years of age. During the month of September there were 49 cases of the disease in the province of Ontario and 5 deaths, while in the month of August there were 44 cases and 5 deaths. In July the record was 20 cases and 3 deaths. The epidemic seems to be more or less general and covers different parts of the province. There was one case in a man 50 years of age. Dr. Roberts, the medical officer of health for Hamilton, where there have been at least a dozen cases, has recently issued an order that children shall not be admitted to any theatres in that city.

Treatment of Diphtheria in the Alexandra Hospital, Montreal.

It is ten years since this hospital was opened in Montreal, and all cases of diphtheria are placed directly under the

¹ See THE LANCET, 1916, vol. 1, p. 1187.

care of the medical superintendent, who is selected after receiving special training in infectious diseases hospitals in the large cities of America. But hospital treatment of diphtheria is not obligatory in Montreal. Dr. H. B. Cushing and Dr. E. V. Murphy have reported¹ upon 2208 patients with diphtheria treated in the hospital during the ten years of its existence. Five per cent. gave a history of previous attacks of diphtheria. Two per cent. occurred in the first year of life, 5 per cent. in the third year, 9 per cent. in the fourth year, 10 per cent. in the fifth year, and then a steady diminution in the percentage cases until the fifteenth year, after which only scattered cases occurred up to the sixtieth year. Among the attendants 51 cases of diphtheria occurred; only 30 of all other infectious diseases altogether. There were no fatalities in the 51 attendants with the disease, and no attempt was made to immunise the attendants. In all cases the diagnosis was based on routine cultures taken on admission. Diphtheria causes about 200 deaths each year in Montreal, and it is still the most fatal contagious disease in the city. Before 1900 the mortality in all published statistics was from 30 to 40 per cent.; since the use of antitoxin has become general it has sunk to 10 per cent., but it is rarely, even in institutions, below this. In the Alexandra Hospital in ten years there have been 166 deaths, or 7½ per cent., making no deduction for those dying immediately on admission. In the year 1915 there were 417 cases and 21 deaths, a mortality of 5 per cent. The laryngeal cases were as usual the most fatal. There were 205 cases where intubation or tracheotomy was necessary, and of these 55 died. In 1915 there were 31 cases of intubation with 5 deaths. Apart from the laryngeal cases the septic and the hemorrhagic cases raised the mortality. Of these there were 12 cases, and all died. Cardiac disturbance, noted in the total cases in 10 years, amounted to 109 cases; albuminuria occurred in 342 cases. Antitoxin is regarded as an absolute specific for the disease, the only cases lost being those admitted too late for treatment or those with some fatal complication. As to any bad results of antitoxin, no record of true anaphylactic shock or death occurred. The routine treatment is to give one large dose on admission, and repeat only in serious cases, or if the membrane extends subsequently, or if there is no improvement in 24 hours. In 1000 consecutive cases only one dose was given in 70 per cent., while 30 per cent. required one or more additional doses. Usually 3000 to 4000 units are given in mild and early cases; 6000 to 8000 units in more serious cases or when the disease has lasted over 48 hours; 10,000 to 12,000 units in all very serious cases. In 1000 cases the average total dose was between 6000 and 7000 units. The low mortality has apparently justified these doses. One essential in the treatment is to preserve the strength of the patient. Dobell's solution is used to cleanse the throat. Absolute rest in bed in all cases is insisted on, and the diet is milk and then soft foods. Ice-collars are used for adenitis, two hours on and two hours off. After two weeks discharge cultures are taken and the patients leave after two negative cultures. The average stay in the hospital was 21 days.

Tuberculosis among Canadian Troops.

A conference was held in Ottawa, Canada, under the supervision of the Canadian Hospitals Commission, to deal with the question of tuberculosis amongst Canadian troops. There are nearly 400 tuberculous soldiers in the hospitals set apart for these cases, and of this number about one-half have been overseas. Dr. Alfred Thompson, M.P. (Yukon), presided at the conference, the expert physicians summoned being Dr. A. R. Baldwin, Saranac Lake, N.Y.; Dr. Charles D. Parfitt, superintendent of Calydor Sanatorium, Muskoka; Dr. J. H. Elliott, Toronto; and Dr. J. R. Byres, Ste Agathe des Monts, Quebec.

Toronto, Oct. 13th.

¹ For full report see the September issue of the Canadian Medical Association Journal.

INSANITARY CONDITIONS IN LINCOLNSHIRE.—At a meeting last week of the Branston rural district council at Lincoln it was stated that in parts of Boultham parish the contents of middens had not been removed for six months, and that school children were suffering in health from the omission. The surveyor stated that the condition had arisen through shortage of labour.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeons: C. N. Ratcliffe, G. P. Burr, W. B. Heywood-Waddington, C. McDonald, and C. H. Terry. The following appointments have been notified:—Temporary Surgeons: J. F. M. Campbell to *Imperieuse*; C. P. Barber to *Pembroke*, additional, for Chatham Hospital; J. Brumwell, J. J. Carroll, and G. E. S. Ward to the *Victory*, additional, for Haslar Hospital; and H. E. Hall to *Vivid*, additional, for Plymouth Hospital.

ROYAL NAVAL VOLUNTEER RESERVE.

To be Surgeon: F. P. Nicholas.

ARMY MEDICAL SERVICE.

TERRITORIAL FORCE.

Lieutenant-Colonel (temporary Colonel) G. F. Gubbin relinquishes his temporary rank on vacating the appointment of Assistant Director of Medical Services.

ROYAL ARMY MEDICAL CORPS.

Major J. D. Richmond to be temporary Lieutenant-Colonel while in command of a Field Ambulance.

Temp. Lieut. J. B. Stephens to be temporary Major.

To be temporary Captains: J. M. Browne, H. K. Groff, C.A.M.C. (late Lieut., R.A.M.C.), E. R. Hunt, J. D. Barris, A. R. Munroe, C.A.M.C. (late Lieut., R.A.M.C.), and Temp. Lieuts. H. G. Kilner, C. R. M. Patison, W. Martin, V. T. W. Eagles, H. Stokes, J. R. B. Dobson, G. C. Ramsay, J. T. MacKenzie, R. M. Hume, D. C. McCabe-Dallas, J. Henderson, J. F. Adamson, S. A. McSwiney, J. Crowley, P. T. T. Macdonald, J. G. Cronyn, J. N. Macdonald, W. B. Thompson, C. R. B. Eyre, J. Donald, J. C. Bawden, C. H. W. Page, J. E. Rees, A. C. Falkiner, M. Polson, H. H. Stones, L. W. Crowe, W. H. Anderson, J. P. E. Henery, T. E. Mulvany, A. F. G. Kerr, E. H. Sheehan, and D. Welsh.

To be temporary Lieutenants: J. H. Thornley, W. J. Morrish, A. B. Ferguson, E. Howe, J. Langwill, G. E. Kinnersley, G. J. Farie, C. C. Kerby, T. W. Walker, L. Leslie, W. T. Morton, F. H. P. Wills, E. F. R. Alford, G. de Bec Turtle, A. Spong, T. M. Bellew, G. E. Macvie, J. R. Burnett, W. F. Addey, J. G. Shanklin, A. J. Hutton, G. M. B. Liddle, H. S. Jones, R. Franklin, A. M. Barlow, W. B. Harris, A. A. Murison, R. C. H. Francis, S. F. Cheesman, H. W. Ogle-Skan, J. E. Frere, N. Purcell, R. H. Beardsley, R. McAllister, G. W. Harrison, J. H. P. Vivian, J. G. G. Pigott, H. E. Girdlestone, J. Naylor, Surg.-Lieut. R. G. Griffin (Assam Valley Light Horse), W. G. McAfee, A. S. Ransome, H. G. Westropp, C. E. H. Paley, J. D. Pearson, H. P. W. Lincoln, J. Whitehead, M. Jenkins, L. G. Carment, E. R. Thompson, D. L. Carmichael, R. Brookes, L. Cairns, J. Paterson, M. J. Loftus, D. MacKinnon, E. T. Jameson, L. B. Fannin, W. J. Thomas, and G. A. Crowe.

Temporary Captains relinquishing their commissions: R. M. Allan, E. C. Lindsay, E. C. Black, H. A. Lunn, S. Ritson, W. W. Waller, R. W. Russell-Jones, A. A. Hudson, R. A. Jones, W. S. Fox, A. T. Patterson, G. R. Lawless, C. E. Lea, F. B. Dreyer, and T. C. Milligan. E. H. G. Duncan (on account of ill-health).

Temporary Lieutenants relinquishing their commissions: G. Adam, H. F. Sheldon, J. R. Irwin, R. Maclean, C. R. Learn, O. E. Ward, J. McKail, McW. Henry, J. Mallock, H. Tipping, A. J. Ferguson, J. Walker, L. S. H. Glanville, F. Simpson, A. R. Hobbs, A. G. Faulds, C. Robertson, A. L. Robinson, C. B. Gervis, N. McFarlane, H. M. Robertson, J. Gardner, E. F. Milton, W. C. Downs, J. M. Lang, and W. E. Ainley.

SPECIAL RESERVE OF OFFICERS.

The undermentioned to be Lieutenants: T. Crisp, from Edinburgh University Contingent, Officers Training Corps, and A. L. Giblin.

TERRITORIAL FORCE.

West Riding Field Ambulance: Captain G. E. St. C. Stockwell, West Yorkshire Regt., to be Captain (temporary). Attached to Units other than Medical Units.—Capt. A. G. Lovett-Campbell to be Major. Capt. J. Owen to be seconded while holding a temporary commission in the R.A.M.C.

INDIAN MEDICAL SERVICE.

Major J. W. D. Megaw, professor of pathology at King George's Medical College, Lucknow, is appointed temporarily to hold charge of the office of the Principal in the College in addition to his own duties.

PROMOTION OF LIEUTENANTS OF ROYAL ARMY MEDICAL CORPS, SPECIAL RESERVE AND TERRITORIAL FORCE.

Lieutenants appointed to commissions in the R.A.M.C., Special Reserve and Territorial Force, on or after Oct. 15th, will not be eligible for promotion to the rank of Captain until they have completed 12 months' embodied service.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census 7565 births and 3919 deaths were registered during the week ended Saturday, Oct. 21st. The annual rate of mortality in these towns, which had been 13.5, 12.5, and 12.2 per 1000 in the three preceding weeks, further fell to 11.8 per 1000 in the week under notice. Among the several towns the death-rate ranged from 2.1 in Oxford, 4.5 in Acton, 5.1 in Hornsey and in Walthamstow, 5.8 in Ilford, and 6.1 in Aberdeen, to 17.0 in Barrow-in-Furness, 17.1 in Derby, 17.3 in Rochdale, 17.9 in Lincoln, and 19.2 in Burnley.

The 3919 deaths from all causes were 152 below the number in the previous week, and included 306 which were referred to the principal epidemic diseases, against numbers declining from 594 to 367 in the five preceding weeks. Of these 306 deaths, 221 resulted from infantile diarrhoeal diseases, 40 from diphtheria, 17 from measles, 11 from enteric fever, 10 from whooping-cough, and 7 from scarlet fever, but not one from small-pox. The annual death-rate from these diseases was equal to 0.9, against 1.1 per 1000 in the previous week. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had declined from 477 to 259 in the five preceding weeks, further fell to 221, and included 52 in London, 18 in Liverpool, 9 in Birmingham, and 8 each in Nottingham and Sheffield. The deaths attributed to diphtheria, which had been 40, 52, and 45 in the three preceding weeks, fell to 40, of which 11 occurred in London and 3 in Coventry. The fatal cases of measles, which had been 23, 25, and 21 in the three preceding weeks, fell to 17, and included 5 in London and 2 each in Liverpool, Manchester, and Tynemouth. The deaths referred to enteric fever, which had been 11, 13, and 10 in the three preceding weeks, numbered 11, of which 2 were registered in Derby. The deaths referred to whooping-cough, which had been 20, 15, and 23 in the three preceding weeks, fell to 10, and included 2 in Hull. The fatal cases of scarlet fever, which had been 10, 13, and 9 in the three preceding weeks, fell to 7, and included 2 each in London and Liverpool.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had increased from 980 to 1074 in the five preceding weeks, declined to 1067 on Saturday last; 125 new cases were admitted during the week, against 151, 159, and 167 in the three preceding weeks. The cases of diphtheria, which had risen from 1262 to 1410 in the five preceding weeks, further rose to 1429; 188 new cases were admitted during the week, against 193, 228, and 194 in the three preceding weeks. These hospitals also contained on Saturday last 61 cases of measles, 44 of whooping-cough, and 39 of enteric fever, but not one of small-pox. The 961 deaths from all causes in London were equal to the number in the previous week, and corresponded to an annual rate of 11.6 per 1000. The deaths referred to diseases of the respiratory system, which had been 130, 136, and 132 in the three preceding weeks, were again 132 in the week under notice.

Of the 3919 deaths from all causes in the 96 towns, 163 resulted from violence, 343 were the subject of coroners' inquests, and 1207 occurred in public institutions. The causes of 39, or 1.0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London and in its 14 suburban districts, in Leeds, Bristol, Bradford, Newcastle-on-Tyne, and in 56 other smaller towns. Of the 39 uncertified causes, 8 were registered in Birmingham, 6 in Liverpool, 4 in Gateshead, 3 in Preston, and 2 in Bootle.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an estimated aggregate population of 2,372,000 persons at the middle of this year 1026 births and 618 deaths were registered during the week ended Saturday, Oct. 14th. The annual rate of mortality in these towns, which had been 14.5, 13.6, and 15.1 per 1000 in the three preceding weeks, fell to 13.6 per 1000 in the week under notice. During the 13 weeks of last quarter the mean annual death-rate in these towns averaged 12.6, or 1.2 per 1000 above that recorded in the large English towns. Among the several towns the death-rate during the week ranged from 7.6 in Kirkcaldy, 8.3 in Leith, and 8.7 in Motherwell, to 14.4 in Paisley, 14.8 in Glasgow, and 18.2 in Dundee.

The 618 deaths from all causes were 67 below the number in the previous week, and included 61 which were referred to the principal epidemic diseases, against 75 and 92 in the two preceding weeks. Of these 61 deaths, 30 resulted from infantile diarrhoeal diseases, 16 from measles, 7 from scarlet fever, 4 from diphtheria, 3 from enteric fever, and 1 from whooping-cough, but not one from small-pox. The death-rate from these diseases was equal to 1.3, against 1.1 per 1000 in the large English towns. The deaths of infants

(under 2 years) from diarrhoea and enteritis, which had been 83, 50, and 66 in the three preceding weeks, fell to 30, and included 16 in Glasgow, 4 each in Dundee and Kilmarnock, 3 in Motherwell, and 2 in Greenock. The deaths referred to measles, which had been 4, 5, and 8 in the three preceding weeks, further rose to 16, and comprised 13 in Dundee, 2 in Glasgow, and 1 in Edinburgh. The fatal cases of scarlet fever, which had been 3, 6, and 7 in the three preceding weeks, were again 7 in the week under notice, and included 3 in Glasgow and 2 in Aberdeen. The deaths attributed to diphtheria, which had been 5, 9, and 5 in the three preceding weeks, numbered 4, of which 2 occurred in Glasgow. Of the 3 fatal cases of enteric fever, 2 were registered in Kilmarnock and 1 in Edinburgh. The death from whooping-cough occurred in Coatbridge. In addition to the above deaths, a fatal case of typhus was recorded in Dundee.

The deaths referred to diseases of the respiratory system, which had increased from 45 to 94 in the five preceding weeks, fell to 30 in the week under notice, and were 42 below the number registered in the corresponding week of last year. The deaths from violence numbered 17, against 25 and 36 in the two preceding weeks.

In the 16 largest Scotch towns 1108 births and 589 deaths were registered during the week ended Saturday, Oct. 21st. The annual rate of mortality in these towns, which had been 13.6, 15.1, and 13.6 per 1000 in the three preceding weeks, fell to 13.0 per 1000 in the week under notice. Among the several towns the death-rate ranged from 2.3 in Clydebank, 5.3 in Hamilton, and 7.6 in Kirkcaldy, to 13.8 in Paisley, 15.3 in Dundee, and 15.4 in Kilmarnock.

The 589 deaths from all causes were 29 below the number in the previous week, and included 53 which were referred to the principal epidemic diseases, against 92 and 61 in the two preceding weeks. Of these 53 deaths, 29 resulted from infantile diarrhoeal diseases, 12 from diphtheria, 4 from whooping-cough, 3 each from enteric fever and scarlet fever, and 2 from measles, but not one from small-pox. The death-rate from these diseases was equal to 1.2, against 0.9 per 1000 in the large English towns. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had been 50, 66, and 30 in the three preceding weeks, were 29, and included 17 in Glasgow, 4 in Dundee, and 3 in Edinburgh. The deaths referred to diphtheria, which had been 9, 5, and 4 in the three preceding weeks, rose to 12, of which 4 were registered in Glasgow, 3 in Edinburgh, and 2 in Aberdeen. The 4 fatal cases of whooping-cough were slightly in excess of the average in recent weeks, but showed no excess in any particular town. The deaths attributed to scarlet fever, which had been 6, 7, and 7 in the three preceding weeks, fell to 3, and comprised 2 in Glasgow and 1 in Aberdeen. The 3 deaths from enteric fever, of which 2 occurred in Glasgow and 1 in Paisley, were equal to the average in the three preceding weeks. The fatal cases of measles, which had increased from 4 to 16 in the four preceding weeks, fell to 2, both of which were recorded in Dundee. In addition to the above deaths a fatal case of typhus was registered in Glasgow.

The deaths referred to diseases of the respiratory system, which had been 72, 94, and 90 in the three preceding weeks, fell to 74 in the week under notice, and were 62 below the number registered in the corresponding week of last year. The deaths from violence numbered 26, against 36 and 17 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the registration district of Dublin 198 births and 135 deaths were registered during the week ended Saturday, Oct. 14th. The annual rate of mortality, which had been 15.6, 18.3, and 18.7 per 1000 in the three preceding weeks, fell to 17.7 in the week under notice, against 11.7 and 14.8 per 1000 in London and Glasgow respectively.

The 135 deaths from all causes included 32 of infants under 1 year and 35 of persons aged 65 years and upwards. Fourteen deaths (of infants under 2 years) were referred to diarrhoeal diseases, 3 to enteric fever, 2 to whooping-cough, and 1 each to measles and diphtheria. The causes of 7 deaths were uncertified, and those of 4 others were the subject of coroners' inquests, while 58, or 43 per cent., of the total deaths occurred in public institutions.

During the same period 183 births and 102 deaths were registered in the city of Belfast. The deaths corresponded to an annual rate of 13.6, or 0.4 per 1000 less than in the previous week, and included 23 of infants under 1 year and 21 of persons aged 65 years and upwards. Nine deaths (of infants under 2 years) were referred to diarrhoeal diseases, and 1 each to enteric fever, measles, and whooping-cough. The causes of 3 deaths were the subject of coroners' inquests, and that of 1 other was uncertified, while 24 of the total deaths occurred in public institutions.

In the registration area of Dublin 189 births and 133 deaths were registered during the week ended Saturday, Oct. 21st. The annual rate of mortality, which had been 18.3, 18.7, and 17.7 per 1000 in the three preceding weeks, fell to 17.5 in the week under notice, against 11.6 and 13.7 per 1000 in London and Glasgow respectively.

The 133 deaths from all causes included 27 of infants under 1 year and 30 of persons aged 65 years and upwards. Three deaths were referred to enteric fever, 3 (of infants under 2 years) to diarrhoeal diseases, and 1 each to measles, and scarlet fever. The causes of 5 deaths were the subject of coroners' inquests, and those of 4 others were uncertified, while 59, or 44 per cent., of the total deaths occurred in public institutions.

During the same period 173 births and 98 deaths were registered in the city of Belfast. The deaths corresponded to an annual rate of 13.1, or 0.5 per 1000 less than that recorded in the previous week, and included 18 of infants under 1 year and 18 of persons aged 65 years and upwards. Six deaths of infants (under 2 years) were referred to diarrhoeal diseases, 2 to enteric fever, and 1 each to scarlet fever and diphtheria. The causes of 8 deaths were the subject of coroners' inquests, and 29 of the total deaths occurred in public institutions.

Obituary.

PROFESSOR ALBERT NEISSER.

By the death of Professor Albert Neisser on July 30th Germany lost one of her greatest scientists, and the whole world is the poorer for the loss. Like so many of the most distinguished scientists of the last century in Germany, Neisser was of Semitic descent. He was born on Jan. 22nd, 1855, near Breslau, and was the son of Moritz Neisser, also a distinguished physician. Albert Neisser's career was associated with Breslau almost uninterruptedly. His medical studies were conducted in Breslau and Erlangen. In 1877 he received the M.D. for his thesis on "Die Echinokokkenkrankheit." In 1879 he drew attention to the presence in gonorrhoeal discharge of certain cocci, whose characteristics were sufficiently distinctive to warrant their identification with the causation of gonorrhoea. He was attached as assistant to the Breslau University Hospital and Polyclinic for Syphilis and Diseases of the Skin under Oskar Simon, whose death in 1882 created a vacancy which was filled by Neisser, then only 27. Breslau's early recognition of Neisser's abilities was amply justified by subsequent events, and was rewarded by the loyalty he showed to his Alma Mater. He refused every offer of promotion elsewhere, including the succession to Lewin in Berlin in 1896. Under Neisser's supervision the primitive, prison-like buildings of the Allerheiligen Hospital were replaced in 1892 by a thoroughly up to date and fully equipped hospital. In 1902 he founded "Deutsche Gesellschaft zur Bekämpfung der Geschlechtskrankheiten." The discovery by Metchnikoff and Roux of the susceptibility of monkeys to syphilis in 1903 led Neisser in the following year to initiate a vast scheme of experimental study of syphilis in monkeys. Accompanied by his wife and two assistants, he started early in 1905 on his expedition to Java, where he remained several months, studying the conditions under which syphilis occurs in the monkey. It was during Neisser's absence from home that the *Spirochaeta pallida* was discovered by Schaudinn and Hoffmann. Their observations were quickly confirmed in Java by Neisser. In conjunction with Bruck and Wassermann, Neisser contributed much of the spade work on which the reaction, now known as Wassermann's, is based. He travelled in Norway and Spain to study leprosy, and he contributed a vast amount of clinical and bacteriological observation to the study of syphilis. But his name will always be primarily associated with gonorrhoea; he was not only, as his countrymen affectionately call him, "the Father of the Gonococcus," but also a pioneer in the rational treatment of gonorrhoea. He insisted on the constant control of treatment by the microscope, he combated the indiscriminate use of astringents to the exclusion of other drugs, and he was the first to recommend protargol in gonorrhoea. For his experiment of injecting syphilitic serum into four healthy persons Neisser incurred the ill will of the authorities in 1900. He was publicly reprimanded and fined, and he does not appear to have been compensated for this unwelcome notoriety by any valuable observations from his daring and illegal experiments.

His health had been failing for some years, and he had suffered from diabetes for a long time. A few years before his death he fractured one thigh by a fall in a cellar; he was confined to bed for several months and never recovered his former vitality. He was also subject to nephrolithiasis, and in July of this year he insisted on travelling to Brussels to

attend an exhibition, although he was suffering from renal colic, complicated by cystitis. On his return home he attempted to attend a meeting in Düsseldorf, but was forced instead to retire to Berlin where, on July 21st, he was operated on for a stone which had descended to the bladder. Two days later he returned to Breslau. Here sepsis and high fever developed, and he died on July 30th, having been comatose for a day.

RALPH BROWN, M.D., B.S. LOND., M.R.C.S. ENG.,

L.R.C.P. LOND.,

SENIOR ASSISTANT PHYSICIAN AND DEPUTY MEDICAL SUPERINTENDENT, BETHLEM AND BRIDEWELL ROYAL HOSPITALS.

ONE of a large family of sons, all serving their country, Ralph Brown had volunteered for a commission in the Royal Army Medical Corps, when his untimely death on Oct. 6th occurred from typhoid fever.

Ralph Brown was born in 1880 and educated at Sherborne School and University College, London, where he quickly showed brilliant promise. He became prosector of anatomy, and later gained the gold medal in materia medica and therapeutics. Owing to the fact that University College Hospital was in the process of being rebuilt, he transferred in 1903 to Westminster Hospital, where he gained the scholarship for third-year students. He took the English Conjoint Diploma in 1906 and graduated M.B., B.S. at the University of London in 1908. At Westminster he held in turn the usual resident posts, and later became house physician to Bethlem Royal Hospital, having decided to specialise in psychological medicine. He was appointed resident medical officer to Moorcroft Asylum, Hillingdon, but in 1911 he returned to Bethlem as junior assistant physician, becoming also assistant medical officer to King Edward Schools, London and Witley. In 1913 he took his Doctorate of Medicine by passing in psychology and mental diseases, and in 1914 was appointed senior assistant physician to Bethlem.

Of a quiet and retiring disposition, his kindness of heart and sympathetic manner were as obvious as his scientific attainments. The future would have held much success in store for him.

One of Ralph Brown's brothers is a prisoner of war and another was killed fighting in Flanders.

FRANCIS CLARE MELHADO,

SECRETARY-SUPERINTENDENT OF THE MIDDLESEX HOSPITAL.

WE regret sincerely the death of Mr. F. Clare Melhado, secretary-superintendent of the Middlesex Hospital, on Oct. 18th, at the age of 54. He had been connected with the Middlesex Hospital since 1879, and had held the appointment of secretary-superintendent since 1888. His loss to the institution will be most severely felt, for he had devoted all his energies to its welfare. Mr. Melhado had a large circle of friends, including the members of the Weekly Board, the consulting and acting staff, and numerous men who had been students of the hospital. His genial and courteous manner made him universally popular, and it was everywhere recognised that he was eager and willing to subjugate all other matters to the benefit of the hospital to which he was so devoted.

THE LATE MR. CHAUNCY PUZEY.

Mr. R. W. Murray, F.R.C.S., writes:—

May I be permitted to supplement the short obituary notice which appears in THE LANCET of Oct. 21st concerning my old friend Chauncy Puzey. Puzey made his reputation as a surgeon in the early antiseptic days, and was probably the first surgeon in Liverpool to prepare and use an absorbable catgut ligature. The basis upon which his reputation rested was his sound surgical judgment and well-thought-out opinion. He was by no means a bold surgeon or a brilliant operator. Before he undertook any operation, no matter how trivial, the reason for the operation was always carefully considered and the various steps thought out in detail. He was scrupulously clean in his methods and obtained excellent results. Puzey was never an ambitious man, and his deliberate and punctilious manner prevented him from ever acquiring a large consulting practice, but so highly was his opinion valued by those who knew him that had one of his colleagues been threatened with the loss of a limb he would not have consented to amputation being performed unless Puzey said it was really necessary.

Correspondence.

"Audi alteram partem."

ATMOSPHERIC CONDITIONS IN RELATION TO TRENCH FEVER.

To the Editor of THE LANCET.

SIR,—In continuation of the suggestion made by me in THE LANCET of August 19th that the atmospheric conditions in the trenches may be the cause of trench fever, I give in the accompanying table the atmospheric conditions at the Parc de Saint-Maur Observatory, Paris, for 11 hours continuously on July 17th, 1912:—

(A) Hourly Atmospheric Conditions at the Parc de Saint-Maur Observatory, Paris, July 17th, 1912.

(B) Atmospheric Conditions which Raised Body Temperature in the Spinning and Weaving Sheds.

(C) Degree to which Temperature was Raised by Exposure in the Spinning and Weaving Sheds.

| | (A) | | | | (B) | | | (C) | | |
|--------|---------------------------|-----------|-------------------------------------|------------------------------|---------------------------|-----------|-------------------------------------|----------------------------------|--------|--------------|
| | Temperature of air (°F.). | | Drying power of air per 10 cub. ft. | Velocity of wind per second. | Temperature of air (°F.). | | Drying power of air per 10 cub. ft. | Body temperature in mouth (°F.). | Pulse. | Respiration. |
| 1 P.M. | Dry. 85.5 | Wet. 71.8 | Gr. 63.6 | 3 | Dry. 85.5 | Wet. 78.0 | Gr. 44.0 | 100.1 | 82 | 22 |
| 2 .. | 83.6 | 68.7 | 67.6 | 3 | 83.5 | 74.0 | 50.0 | 99.8 | 116 | 20 |
| 3 .. | 82.4 | 68.9 | 61.2 | 5 | 82.0 | 77.0 | 28.0 | 100.2 | 80 | 24 |
| 4 .. | 82.5 | 70.1 | 39.1 | 4 | 82.0 | 77.0 | 28.0 | 100.2 | 80 | 24 |
| 5 .. | 82.9 | 67.7 | 64.5 | 3 | 83.0 | 74.0 | 47.0 | 99.8 | 104 | 21 |
| 6 .. | 79.8 | 72.2 | 34.8 | 3 | 80.0 | 71.0 | 44.0 | 100.0 | 90 | 24 |
| 7 .. | 77.0 | 70.5 | 31.0 | 2 | 77.0 | 70.0 | 33.0 | 100.0 | 100 | 26 |
| 8 .. | 75.2 | 69.3 | 21.0 | 0 | 75.0 | 69.5 | 26.6 | 100.2 | 110 | 18 |
| 9 .. | 73.4 | 67.8 | 23.2 | 1 | 73.5 | 68.0 | 24.5 | 100.0 | 90 | 22 |
| 10 .. | 71.7 | 66.7 | 17.6 | 2 | 72.0 | 67.0 | 18.0 | 100.0 | 72 | 14 |
| 11 .. | 71.4 | 67.8 | 10.8 | 0 | 72.0 | 67.0 | 18.0 | 100.0 | 72 | 14 |

Conditions marked (a) will cause pyrexia; (b) will not cause pyrexia. In the experiment (B) no movement of the air was perceptible.

The record of atmospheric conditions at the Parc de Saint-Maur is taken from the "Annales du Bureau Central Météorologique de France," 1912, published by M. Angot, the Director. I have, however, converted the centigrade reading into Fahrenheit, and instead of giving the relative humidity of the air, I have given the wet-bulb temperature and the drying power of the air calculated from the dry-bulb temperature and the relative humidity. This I have done in order to render easier a comparison with the conditions which are known to raise body temperature in the humid cotton- and linen-weaving sheds in Lancashire and in Ireland.

In line with each hourly observation at the Parc de Saint-Maur I have placed a record of atmospheric conditions which so raised the body temperature of a considerable number of the operatives in the humid cotton-weaving sheds in Lancashire and in the humid linen-weaving sheds in Ireland. Comparing these atmospheres it is evident that the atmospheric conditions marked (a) at the Parc de Saint-Maur on July 17th, 1912, were for six hours continuously such as would cause pyrexia in many. For they present a greater impediment to loss of heat from the body, especially by evaporation, than the conditions in the cotton spinning and weaving sheds. But the latter raised the body temperature of many of the operatives to 37.7° C. (100.0° F.) or higher in less than four hours. Hence I conclude that the atmospheric conditions at the Parc de Saint-Maur from 5 P.M. to 11 P.M. on July 17th, 1912, were such as would cause a pyrexia of short duration in some.

It may be objected that even if the atmospheric conditions at the Parc de Saint-Maur are such as produce fever it does not follow that the atmospheric conditions in the trenches are similar. Such objection is reasonable and

cannot be answered satisfactorily without actual meteorological observations in the trenches or in their vicinity. The nearest stations to the trenches at which suitable observations were recorded are, I am informed by M. Angot, Arras and Lille, and he adds that they are at the present moment lost.

It is probable, however, that the atmosphere of the trenches is more humid, from the proximity of the marshes in "No Man's Land," than the atmosphere of the Parc de Saint-Maur. Such greater humidity would present a greater impediment to loss of heat from the body by evaporation and would, the temperature and movement of both atmospheres being the same, raise body temperature more than the atmosphere in the Parc de Saint-Maur. But comparison of the Parc de Saint-Maur atmosphere with that in the cotton-sheds shows that for six hours continuously on July 17th, 1912, it was such as would raise body temperature above 37.7° C. (100.0° F.)—that is, it was such as would produce in many, in less than four hours, a pyrexia of short duration. This shows, at all events, that in France the atmospheric conditions in the summer are sometimes such as will cause fever.

For these reasons I think that the atmospheric conditions in the trenches and in their vicinity deserve investigation as a possible cause of a pyrexia of short duration with relapses, such as trench fever is described to be.

I am, Sir, yours faithfully,

MATHEW D. O'CONNELL, M.D. R.U.I.

Harrogate, Oct. 14th, 1916.

Colonel, R.P.; late A.M.S.

TRENCH PYREXIAS.

To the Editor of THE LANCET.

SIR,—In your issue of Sept. 9th there appears a short note on Trench Pyrexias, being a contribution to the etiology of what is popularly but quite incorrectly described as "trench" fever.

It is to the author's suggestions as to the causation of the disease that I should like to draw attention. He adduces (1) the trench rat, with which he presumably includes its accompanying parasites, and (2) reluctance on the part of the men to go to the latrines when in the trenches on account of the danger of being knocked over while there, with resultant constipation. I am afraid that neither of these suggestions will account for the facts. Last winter, while on the staff of a casualty clearing station, I made a study of cases of the type of disease alluded to as "trench pyrexias." I saw over 200 of them and made clinical memoranda on 50. While most occurred in men from the trenches a fair proportion of the patients had never been within 12 miles of the front line, had never seen a "trench" rat (not that he differs from any other), and had no cause to refrain from visiting the latrines as often as they wished. I cannot remember whether the author mentions lice as a possible source of infection. This has been suggested, but cannot be accepted, for I have known the symptoms to occur in men who had never suffered from pediculosis, among others in the staff of a D.D.M.S., who lived in a château with all modern conveniences.

As for my own cases, after sorting out paratyphoid cases (of which I saw only three), incipient pleurisy and pneumonia, and trench nephritis, I came to the conclusion that the remainder could be attributed to influenza in what (for I know not what reason) has been described as its "nervous" form. "Trench" pyrexias do not, I consider, differ in any way from those met with in civil practice.

My experience as to the course of the disease differed from that of the author in that I found that the pyrexia often lasted from five to ten days and sometimes longer. In those cases of more or less prolonged fever I found the subsequent prostration was often considerable. In fact, towards the end of my work with these cases I made it a rule to send on to the base all those who ran a temperature on the fifth day from the onset of the fever. I further found that relapses were of common occurrence.

The most marked clinical features of the disease as I saw it were the pains in the loins and shins and headache. The pains in the legs I found particularly hard to treat.

Trusting that you will pardon the disjointed nature of these remarks, and apologising for the enforced use of pencil,

I am, Sir, yours faithfully,

B. E. F., France, Sept. 22nd, 1916.

S. C. DYKE.

"ORTHOPÆDICS" AND PHYSICAL TREATMENT.

To the Editor of THE LANCET.

SIR,—More could and should be done to relieve the disablement of wounded soldiers, particularly of those who are discharged as no longer fit for military duty. In the medical and lay press there is some little confusion of terms. A demand is made for a wide extension of "orthopædic treatment" for the benefit of the classes just mentioned, and what is apparently intended is not alone surgical aid, but also the "combined physical treatment," by means of baths, massage, exercises, and electricity, which is being gradually introduced into this country, and which has been found so beneficial for the wounded. The word "orthopædics" is assuming a much wider meaning, since in the new military hospitals called by that name stiff limbs and wasted muscles are to form a large proportion of the cases treated.

With the precision of thought and language, which is so delightful in some of our continental colleagues, Dr. Delterre, the medical director of the Anglo-Belge Hospital for disabled soldiers at Rouen, defines the three departments of his work as (1) *interventions chirurgicales*, (2) *prothèse* (splints and artificial limbs), (3) *physiothérapie*. These are all regarded as independent branches of the medical art and are placed under the direction of experts, but for the case of wounded soldiers are considered essential and interdependent. In our country *interventions chirurgicales* and *prothèse* have attained a high position. The third, *physiothérapie*, as it is now practised, is a definite method of treatment applicable to the large majority of disabled soldiers. This method, or group of methods, being physical, has strong affinities with physical training and re-education. Therefore it pertains, not to the hospital ward, but to the camp or clinic. Its value and close connexion with training and industrial education have been recently proved in our own country at the Command Dépôts of Heaton Park and Tipperary.¹

A special committee of the Royal Society of Medicine (Section of Balneology) has for two years been studying the best means of applying these methods of treatment to the wounded in the British Islands. None know better than the committee how wide is the scope of this matter and how many are the problems involved in it. It may be gravely doubted whether physical treatment as it is now understood can be adequately given in the wards of orthopædic hospitals and even whether it is possible that the surgeons, who are so fully occupied with *interventions chirurgicales*, can give time or study to it.

It is submitted that the question for to-day is: How and where can these combined physical remedies best be provided for unknown numbers of wounded? Their great importance has now been generally admitted, and their special value in the care of disabled soldiers fully established. Surely it is an urgent necessity in the first place that a sufficient number of medical men should specialise in the study and administration of physical treatment, and it is most desirable that as the need for it increases throughout the country there should be no lack of men competent to undertake its supervision.

I am, Sir, yours faithfully,

London, Oct. 16th, 1916.

R. FORTESCUE FOX.

THE PREPARATION OF STABLE COLLOIDAL ANTIMONY.

To the Editor of THE LANCET.

SIR,—Your correspondent, Dr. Upendra Nath Brahmachari, whilst referring to "the brilliant results" obtained by the use of colloidal metals, in THE LANCET of Oct. 21st, is in error in assuming that stable solutions of colloidal antimony are not to be obtained. The late Mr. Henry Crookes not only prepared a perfectly stable solution of colloidal antimony in the Crookes' laboratories as long ago as 1912, but that preparation (collosol antimony) is perfectly stable to-day, and exhibits most active Brownian movement. Moreover, the tests made by Mr. Henry Crookes showed that antimony was

strongly inhibitory to such micro-organisms as the *B. coli communis*, *B. prodigiosus*, and the staphylococci, and the results of further experiments upon the *B. phosphorescens* (exhibited by Mr. Crookes to the Royal Society) showed antimony together with arsenic and silver at the head of a list of 22 metals in bactericidal effect.

In the absence of opportunity for clinical experiment its specific action in leishmaniosis was not then tested, as the properties of the collosols were not appreciated at that time. Since then, the Crookes Laboratories have been too much occupied with the production of other metallic colloids, and more recently with the collosols of iodine and sulphur, to deal comprehensively with collosol antimony, but a supply of this colloid—which has stood the test of four years and now exhibits ultra-microscopically equal stability and activity of Brownian movement to that occurring when it was first tested by Sir William Crookes in 1912—is still available. Moreover, being a chemically prepared colloid, it does not break down in the presence of electrolytes, as has been so amply proved in the case of the electrically prepared colloidal solutions.—I am, Sir, yours faithfully,

LEWIS STROUD, M.A. Oxon.

The Crookes Laboratories, 50, Egin-crescent, W.,
Oct. 24th, 1916.

MEDICAL WOMEN AND EQUALITY OF PAY.

To the Editor of THE LANCET.

SIR,—With regard to a letter under this heading published in THE LANCET of Oct. 14th, I should like to suggest that at the present time it is the duty of the Government to get any work done at the lowest possible figure compatible with efficiency. If patriotic medical women would remember that thousands of men have been deprived of homes, incomes, and lives in order that the more fortunate of us may live, we might hear less of the injustice in giving women only £400 a year. We ought to be conscripted and put on a separation allowance. There is no justice in war, and those who are fighting get least, as far as I can see.

I am, Sir, yours faithfully,

KATHARINE M. MACKENZIE.

Ayrshire Sanatorium, New Cumnock, Oct. 24th, 1916.

"CLERGYMEN'S SORE-THROAT."

To the Editor of THE LANCET.

SIR,—The bad effects produced upon the throats of clergymen by speaking downwards have been long recognised by laryngologists and were first pointed out many years ago by Dr. Whipple. This fact will be found referred to in my text-book on "Diseases of the Throat, Nose and Ear," third edition, p. 54.

I am, Sir, yours faithfully,

Oct. 23rd, 1916.

P. MCBRIDE.

FALLOPIAN TUBE FOUND IN FEMORAL HERNIA.

To the Editor of THE LANCET.

SIR,—In the year 1882 I had a similar case to the one reported in THE LANCET last week by Mr. E. G. Renny (on the right side) when I was dresser to the late Sir Henry G. Howse at Guy's. The patient was a single woman, aged 25 or 26. The sac when opened contained some omentum, and the fimbriated extremity of the Fallopian tube was covered by this. I feel sure that Sir Henry Howse must have placed this case on record—probably in the Guy's Hospital Reports.

I am, Sir, yours faithfully,

Northfleet, Kent, Oct. 24th, 1916.

H. T. SELLS.

CHADWICK PUBLIC LECTURES.—The autumn programme of Chadwick lectures includes three lectures by Professor Wm. Stirling on Fatigue, and its Effects on Industry and Efficiency (Fridays, Oct. 27th and Nov. 3rd and 10th, at 5.15 P.M., in the Lecture-room of the Royal Society of Arts, John-street, Adelphi); three lectures by Dr. Charles Porter, medical officer of health of Marylebone, on The Health of the Future Citizen (Thursdays, Nov. 2nd and 9th, and Tuesday, Nov. 14th, at 3 P.M., in the Norwich Museum); a lecture by Dr. J. T. C. Nash, county medical officer of health of Norfolk, on Baby-Saving for the Nation (Monday, Nov. 20th, at 5 P.M., in the Hampstead Central Library, Finchley-road). All the lectures will be illustrated by lantern slides. Admission is free.

¹ See Major R. Tait McKenzie's paper on the Treatment of Convalescent Soldiers by Physical Means read before the Royal Society of Medicine, July 21st, and Mr. Cyril Jackson's letter on "Broken Soldiers" in the Times of Sept. 15th.

The War.

THE CASUALTY LIST.

The following names of medical officers appear among the casualties announced since our last issue :—

Killed.

Capt. G. M. Levack, R.A.M.C., attached Oxford and Bucks Light Infantry, qualified M.B., Ch.B. Edin. in 1914, and at once took up Army work. He was with the Seaforth Highlanders for 12 months, and took part in several actions in which his battalion was engaged.

Capt. W. R. Pagen, R.A.M.C., attached East Kent Regiment, was educated at Durham University and at the London Hospital, and qualified in 1905. Previous to joining the R.A.M.C. he was in practice at Cockermouth, and was the medical officer of No. 1 District of the Cockermouth Union.

Captain R. E. Horkins, R.A.M.C., attached Royal Field Artillery, came over with the Canadian Expeditionary Force.

Lieut. S. A. Walker, R.A.M.C., attached Cheshire Regiment, came over with the Canadian Expeditionary Force.

Died.

Capt. W. Crymble, R.A.M.C., was educated at Belfast and at Dublin, and qualified in 1909. He had held appointments at the Down District Asylum and at the Royal Victoria Hospital, Belfast, and was also senior assistant medical officer at the Beckett-street Infirmary, Leeds. He went to France at the beginning of the war and was taken prisoner. He was released later and served in the Near East, where he contracted enteric fever, and died at Alexandria.

Wounded.

Lieut. P. S. MacLaren, R.A.M.C., attached Royal Scots.

Lieut. J. E. Thompson, R.A.M.C., attached Liverpool Regt.

Capt. T. I. Dun, R.A.M.C.

Major G. S. Mothersill, C.A.M.C., attached Canadian Infantry.

Lieut. A. Davidson, R.A.M.C., attached London Regiment.

Capt. J. C. Matthews, R.A.M.C., attached Liverpool Regiment.

Capt. S. A. Montgomery, R.A.M.C.

Capt. S. Miller, R.A.M.C.

Capt. J. E. Bruneau, R.A.M.C.

Lieut. P. G. Leeman, R.A.M.C.

Capt. R. Silcock, R.A.M.C.

Capt. J. H. Wood, C.A.M.C.

Capt. W. G. Grant, R.A.M.C., attached Essex Regiment.

Capt. J. J. Field, R.A.M.C.

Capt. R. R. Scott, R.A.M.C.

Previously reported believed taken Prisoner at Kut-el-Amara, now reported Prisoner.

Capt. M. L. Puri, I.M.S.

THE HONOURS LIST.

The following awards to medical officers are announced :—

D. S. O.

Surg.-Major Francis William Bailey, R.F.A. (Medical Officer).

For conspicuous gallantry and devotion to duty. When the batteries of his brigade came under heavy shell-fire he at once went out into the open to tend the wounded and dying, with utter disregard of danger.

Major Michael Joseph Mahoney, R.A.M.C.

For conspicuous gallantry and devotion to duty in action. When his aid-post was blown in he at once established another under heavy shell-fire and tended the wounded for two days and nights. When relieved he took a few hours' rest and then returned to his gallant work.

Capt. Joseph Ellis Milne, R.A.M.C.

For conspicuous gallantry and devotion to duty during operations. He has repeatedly tended the wounded under heavy shell-fire, and has shown himself utterly regardless of personal safety.

Capt. Edgar Percival, R.A.M.C.

For conspicuous gallantry and devotion to duty. He led a party of stretcher-bearers into a wood, and remained for over two hours searching for wounded under shell and machine-gun fire. On previous occasions he has done similar gallant work.

Military Cross.

Temp. Capt. Harold Ackroyd, R.A.M.C.

For conspicuous gallantry and devotion to duty during operations. He attended the wounded under heavy fire, and finally, when he had seen that all our wounded from behind the line had been got in, he went out beyond the front line and brought in both our own and enemy wounded, although continually sniped at.

Temp. Lieut. Frederick Alexander Anderson, R.A.M.C.

For conspicuous gallantry and devotion to duty. When his aid-post was hit and all his assistants were wounded, he himself being badly bruised, he helped to dig out three buried men under heavy shell-fire. He stuck to his duty till his battalion was relieved.

Temp. Lieut. Bernard Francis Bailey, R.A.M.C.

For conspicuous gallantry and devotion to duty during operations. For two days and nights he tended the wounded under heavy shell-fire. He was stunned by a shell, but, on regaining consciousness half an hour later, continued his fine work with the greatest coolness.

Temp. Capt. Cyril Carlyle Beatty, R.A.M.C.

For conspicuous courage and coolness when in charge of an advanced dressing-station. By his fine work he has ensured quick and successful evacuation of wounded from the aid-posts. In times of difficulty he set an invaluable example.

Temp. Lieut. James Gordon Bell, R.A.M.C.

For conspicuous gallantry and devotion to duty. He tended the wounded under heavy shell-fire. On being relieved he heard that some wounded men had been left in a trench and immediately went back 2½ miles with a stretcher party through heavy shelling and brought in three wounded men.

Temp. Capt. Thomas Bourne-Price, R.A.M.C.

For conspicuous gallantry and devotion to duty during operations. He went from place to place under very shell-fire to try and get into communication with the ambulance cars. Finally, he was half-smothered by the explosion of three successive heavy shells. For many months he has done very fine and gallant work when in charge of stretcher-bearers, and when tending and evacuating wounded under shell-fire.

Capt. William Bowater, R.A.M.C.

For conspicuous gallantry and devotion to duty during operations. He collected the wounded from the front-line trenches and advanced dressing-stations under heavy shell-fire during several days. He allowed himself hardly any rest, and set a fine example to his men.

Capt. Samuel Brown, R.A.M.C.

For conspicuous devotion to duty during operations. He was blown up by a shell and so much injured that he had to spend the night in a field ambulance; but, though still suffering, he returned to duty next day. A few days later he was again blown up. He has never spared himself, and has displayed the greatest gallantry.

Temp. Capt. William Campbell, R.A.M.C.

For conspicuous gallantry and devotion to duty during operations. He repeatedly attended the wounded under heavy shell-fire. On one occasion, when a dug-out had been hit by a gas shell, he went in to attempt the rescue of those within under very dangerous conditions.

Temp. Lieut. John Russell Christian, R.A.M.C.

For conspicuous gallantry and devotion to duty. When Brigade Headquarters was shelled by the enemy, one man being mortally wounded and two officers incapacitated, he remained with them all night exposed to shell-fire. After the wounded had been removed to safety, he remained behind in order that other units might know where to find him. He has done other fine work.

Temp. Capt. Arthur Gruchy Clark, R.A.M.C.

For conspicuous gallantry and good work, controlling bearers at the front under very heavy fire. He did especially good work in advanced trenches.

Temp. Lieut. Vincent Middleton Coates, R.A.M.C.

For conspicuous gallantry and devotion to duty in action. During an attack he tended the wounded under very difficult circumstances, working without assistance after his orderly was hit. He was under heavy shell-fire.

Capt. Aston Ridley Dale, R.A.M.C., Special Reserve.

For conspicuous gallantry and devotion to duty during operations. He was untiring in his efforts on behalf of the wounded, and showed great courage when a shell burst in the entrance to his dressing-station, killing his orderly and wounding a sergeant.

Temp. Capt. Douglas Allan Donald, R.A.M.C.

For conspicuous gallantry and devotion to duty during operations. When a dug-out was hit by a gas shell, he twice entered and removed two wounded men under very dangerous conditions. He had previously been working continuously for 48 hours removing the wounded from aid-posts.

Temp. Lieut. Richard Felton, R.A.M.C.

For conspicuous gallantry and devotion to duty during operations. He tended the wounded during an intense bombardment, and, a few days later, when a shell blew in the orderly room, killing three men and burying the remainder, he rescued the latter under most dangerous conditions. But for his pluck and devotion to duty many more lives would have been lost.

Temp. Capt. William Eric Giblin, R.A.M.C.

For conspicuous gallantry and devotion to duty in action. He tended the wounded in "No Man's Land" under heavy shell and machine-gun fire, and showed an utter contempt of danger.

Capt. Samuel Sowray Greaves, R.A.M.C.

For conspicuous gallantry and devotion to duty in action. For 36 hours he tended the wounded in the open. On several other occasions he has shown great courage under heavy shell-fire.

Temp. Capt. John Greene, R.A.M.C.

For conspicuous gallantry and devotion to duty during operations. He tended the wounded under heavy shell-fire, though himself injured by a shell which burst only 10 yards from him. He immediately returned to duty after being tended at the dressing station.

Capt. Eben Stuart Burt Hamilton, R.A.M.C., Special Reserve.

For conspicuous gallantry and devotion to duty during operations. He rescued three severely wounded men from the ruins of a dug-out under heavy shell-fire. As he was removing the last man the dug-out was blown in on him, and he had himself to be dug out. He has done other fine work and has shown an utter disregard of danger.

Temp. Capt. John Bowman Hunter, R.A.M.C.

For conspicuous gallantry and devotion to duty during operations. He tended the wounded under heavy shell-fire when the battalion had suffered heavy casualties. By his fine example he inspired all under him with courage and energy.

Temp. Capt. Ernest Emrys Isaac, R.A.M.C.

For conspicuous gallantry and devotion to duty during operations. He tended the wounded in a very exposed position for 12 hours, some of them being wounded and one actually killed by shell-fire in his aid-post. At one time he had worked unceasingly for 35 hours without food, drink, or rest, having divided up his food and water among those of the wounded who most needed it.

Capt. Frank Graham Lescher, R.A.M.C., Special Reserve.

For conspicuous gallantry and initiative in searching for wounded under heavy shell-fire. He repeatedly led his bearers through heavy barrage. He continued his work until he had got all the wounded to safety.

Temp. Capt. Kenneth William Mackenzie, R.A.M.C.

For conspicuous gallantry and devotion to duty during operations. His aid-post was continually shelled, but he carried on with great determination. He personally assisted some of the walking cases across the shelled area, and when water ran out, went himself across the open to get some. He showed an utter disregard of personal safety.

Temp. Lieut. George Boyd McTavish, R.A.M.C.

For conspicuous gallantry and devotion to duty. Throughout very severe fighting he was responsible, by his energy, courage, and contempt for danger, in saving a large number of severely wounded who had been left in the battered front-line trenches or in "No Man's Land."

Temp. Lieut. Gregor Mackenzie Miller, R.A.M.C.

For conspicuous gallantry and devotion to duty during operations. By his splendid example and cheerfulness he gave great encouragement to the men under heavy and continuous shell-fire. He volunteered to remain in the front-line trenches, where he saved the lives of many badly wounded men by being on the spot.

Temp. Capt. Francis John Morris, R.A.M.C.

For conspicuous gallantry and devotion to duty during operations. He led his stretcher-bearers to collect wounded in full view of the enemy's position, and set a fine example to all near him. He has done other similar gallant work.

Temp. Capt. Bartholomew Joseph Mullin, R.A.M.C.

For conspicuous gallantry and devotion to duty during operations. He tended the wounded under heavy shell-fire after himself being knocked down by a shell. He had to work in an open trench without any overhead cover and exposed to enfilade fire.

Capt. Hugh Roger Partridge, R.A.M.C.

For conspicuous gallantry and devotion to duty during operations. During several weeks he was in charge of a collecting post and repeatedly under heavy shell-fire. He has shown the greatest coolness, and has worked incessantly evacuating the wounded. He has been hit more than once by debris, and has set a fine example to those around him.

Temp. Capt. Wellington Le Roy Pedlow, R.A.M.C.

For conspicuous gallantry and devotion to duty during operations. He tended the wounded utterly regardless of the enemy's fire, and carried a severely wounded officer from a very exposed part of the captured position to the aid-post, being fired at all the way.

Capt. Rudolph Albert Peters, R.A.M.C., Special Reserve.

For conspicuous gallantry and devotion to duty during operations. He tended the wounded the whole day and night under heavy shell-fire, and at night was instrumental in getting in many wounded who were lying out in front in the open.

Temp. Capt. Nicol McNicoll Rankin, R.A.M.C.

For conspicuous gallantry and devotion to duty in remaining at his post and attending to the wounded after the regimental aid-post had received three direct hits and he himself had been wounded in the face. For four hours he continued at duty, the area around his aid-post being heavily shelled all the time.

Temp. Capt. Charles Roche, R.A.M.C.

For conspicuous courage and skill in the performance of his duties, many times under fire. He organised large stretcher parties and rescued many seriously wounded men from points which were constantly under heavy fire. He has displayed great devotion to duty under distressing circumstances.

Capt. Hugh Kingsley Ward, R.A.M.C., Special Reserve.

For conspicuous gallantry and devotion to duty during operations. He has shown an utter contempt for danger, going to any and every place, however exposed, in which there were wounded men. He has himself been wounded by a shell while carrying out this gallant work.

Capt. Albert Groenewald, Medical Officer (attached South African Horse).

For conspicuous gallantry and devotion to duty during several actions. He tended the wounded under fire with utter disregard to his personal safety.

Capt. Stephen Liebson, South African Medical Corps.

For conspicuous gallantry and devotion to duty when tending the wounded during operations. Though himself wounded and with nothing but a small trench to work in, he carried on during several days under heavy shell and sniping fire with the greatest courage.

*Bar to Military Cross.***Temp. Capt. William Howard Lister, M.C., R.A.M.C.**

For conspicuous gallantry and devotion to duty during operations. For 30 hours he supervised the work of his stretcher-bearers in the open under heavy shell-fire. On another occasion he searched a wood for wounded under very heavy shell-fire.

(The award of the Military Cross was announced in THE LANCET of June 26th, 1915.)

The following awards are in connexion with the operations in Mesopotamia:—

*Distinguished Service Order.***Major Ernest Vaughan Aylen, R.A.M.C.**

Lieut.-Col. Hubert Oliver Browne Browne-Mason, R.A.M.C.
Capt. Reginald Charles Clifford, I.M.S.
Capt. Leo Murphy, R.A.M.C.

*Military Cross.***Capt. David Arthur, I.M.S.**

Capt. Albert Thomas James McCreery, R.A.M.C.

MENTIONED IN DESPATCHES.

The names of the following medical officers are mentioned in despatches received from Lieut.-General Sir Percy Lake, K.C.B., in connexion with the operations in Mesopotamia and for the relief of Kut-el-Amara:—

Royal Navy.—Staff-Surg. E. Cameron and Surg. F. G. Hitch.

Staff and Headquarters.—Bt. Lieut.-Col. H. Boulton, I.M.S.; Lieut.-Col. G. B. Irvine, I.M.S.; Col. A. E. Tate, A.M.S.; Major A. W. C. Young, I.M.S.; Lieut.-Col. H. O. B. Browne-Mason, R.A.M.C.; Col. P. Hehir, C.B.

Royal Army Medical Corps.—Temp. Capt. R. M. Allan; Major E. V. Aylen; Capt. A. S. Cane; Capt. E. G. S. Cane; Capt. F. H. M. Chapman; Lieut.-Col. (temp. Col.) D. J. Collins; Major H. J. Crossley; Capt. F. T. Dowling; Capt. R. W. Duncan, Special Reserve (killed); Major J. G. Foster; Capt. H. L. Garson, Special Reserve; Capt. A. Glen, Special Reserve; Capt. W. T. Graham; Lieut.-Col. S. F. St. D. Green; Lieut.-Col. J. Hennessy, C.B.; Temp. Capt. A. J. Ireland; Capt. S. W. Kyle; Major F. C. Lambert (deceased); Lieut. W. G. Macdonald; Temp. Capt. A. N. Minns; Capt. T. J. Mitchell; Capt. W. H. O'Riordan; Capt. T. E. Osmond; Lieut.-Col. F. J. Palmer; Bt. Col. J. M. Sloan, D.S.O.; Capt. J. Stanton; Temp. Lieut. J. B. Thackeray; Capt. R. T. Vivian; Capt. H. F. Warwick; Capt. P. A. With.

Indian Medical Service.—Capt. A. R. S. Alexander (died of wounds); Bt. Lieut.-Col. S. Anderson; Capt. D. Arthur; Major E. F. E. Baines; Temp. Lieut. U. N. Banerjee; Major C. H. Barber; Major R. J. Bradley; Temp. Lieut. J. P. Cartevalla; Capt. R. C. Clifford; Major F. P. Connor; Capt. F. C. Fraser; Capt. D. C. V. Fitzgerald; Major W. Gillitt; Major C. M. Goodbody, D.S.O.; Capt. E. S. Goss; Capt. P. D. Green-Armytage; Capt. W. H. Hamilton; Capt. R. de S. B. Herrick; Capt. J. H. Hislop; Major J. H. Horton, D.S.O.; Capt. J. W. Jones; Major R. Kelsall; Capt. E. W. O'G. Kirwan; Capt. L. A. H. Lack; Major R. A. Lloyd; Capt. R. F. D. Macgregor; Major N. W. Mackworth; Capt. J. S. S. Martin; Lieut.-Col. A. H. Nott; Major W. S. Patton; Lieut.-Col. E. L. Perry; Capt. M. L. Puri; Capt. Rai Dewan Hakumat; Capt. H. K. Rowntree; Major C. O. C. Shaw; Capt. J. A. Sinton, V.C.; Capt. R. Sweet; Temp. Lieut. S. D. Sondhi; Lieut. W. C. Spackman; Capt. R. T. Wells; Bt. Col. W. W. White, C.B.; Capt. Sen Jyoti Lal.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Second Lieut. T. S. H. Schäfer, 13th Northumberland Fusiliers, younger son of Sir E. Schäfer, F.R.S., of Edinburgh University.

Lieut. C. H. Brew, Irish Guards, younger son of Dr. R. H. Brew, of Chew Magna, Somerset.

Major R. E. E. Kriekenbeek, Indian Army, second son of the late Dr. C. A. Kriekenbeek, of Colombo, Ceylon.

Second Lieut. S. M. Williams, Sherwood Foresters, only son of the late Dr. R. H. Williams, of Pembroke Dock, South Wales.

Second Lieut. A. L. Menzies, Royal Field Artillery, youngest son of the late Surgeon-General Menzies.

Second Lieut. W. G. Boyd, Inniskilling Fusiliers, only son of Dr. J. C. Boyd, of Lifford, Co. Donegal.

Second Lieut. H. N. Heyward, Durham Light Infantry, third son of Dr. H. Heyward, of South Croydon.

Lieut. F. H. King, West India Regiment, attached West Riding Regiment, elder son of Colonel W. G. King, C.I.E., I.M.S. (retired), of Hatch End, Pinner, Middlesex.

L. A. Seccombe, youngest son of Dr. S. H. Seccombe, of Melbourne, Australia.

Lance-Corpl. W. M. Chapman, London Regiment, second son of Dr. C. W. Chapman, of Harley-street, London.

C. S. Nicholson, New Zealand Machine Gun Co., younger son of Lieut.-Col. J. E. Nicholson, R.A.M.C., of Winchester.

Lieut. J. H. Cameron, Black Watch, son of Dr. A. Cameron, of Dollar, Clackmannanshire.

Lance-Corpl. C. G. Webb, Royal West Kent Regiment, elder son of Dr. C. Webb, of Margate.

Capt. E. P. Wallis, attached Royal Sussex Regiment, son of Dr. P. E. Wallis, of East Grinstead.

OBITUARY OF THE WAR.

GERARD PRIDEAUX SELBY, B.A., M.B., CH.B. OXON.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain G. P. Selby, who was killed on active service on Sept. 26th at the age of 25, was the eldest son of Dr. Prideaux Selby, of Teynham. Educated at Winchester and New College, Oxford, he completed his medical studies



at St. Bartholomew's Hospital, taking his M.B., Ch.B. Oxon. in 1914. At Oxford he was moving spirit in the Officers Training Corps, and later in London he joined the Inns of Court Officers Training Corps, in which he held the rank of sergeant when he passed into the Royal Army Medical Corps in July, 1914, just before war broke out. After six months' service he was promoted to captain, and he used to say that he had been private, corporal, sergeant, lieutenant, and captain all

within a little more than a year. He was first employed in training Royal Army Medical Corps men at Aldershot, and then went out as regimental medical officer to the Argyll and Sutherland Highlanders. He was wounded in the thigh in March, 1915, and after a period as member of a medical board for examining recruits he went out again attached to a field ambulance and later to a battalion of Lancashire Fusiliers. With them he met his death while attending to the wounded in the firing line.

Captain Selby, whilst keen on his medical work and possessing powers of concentration which enabled him to pass his examinations in the minimum time, was also an athlete. At Oxford he rowed as a freshman in the New College Torpids Eight, and he was a useful hockey player at back. His keenness impressed all those with whom he was brought in contact, and the organisation of his aid-post for the advance during which he lost his life was the subject of approving comment by his commanding officer.

JOHN DEIGHTON, B.A., M.B., B.C. CANTAB.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. Deighton, who died of wounds contracted on active service on Sept. 19th, 1916, aged 29, was the third son of Lieutenant-Colonel Deighton, R.A.M.C. (T.), of St. Bernard's, Cambridge. He was educated at St. Faith's Preparatory School, Cambridge; King's School, Canterbury, where he was a scholar; and Trinity College, Cambridge, entering the London Hospital in January, 1912. He took the Conjoint Board qualification in October, 1913, afterwards holding various appointments at the hospital, and qualifying M.B., B.C. Cantab. the following year. In November, 1914, he obtained a commission in the R.A.M.C., and joined the special reserve of officers. In March of the following year he went to France with the 18th General Hospital, and in June was attached as medical officer to the King's Own Royal Lancaster Regiment, with which he met his death.

Captain Deighton was good both at work and play. At Cambridge he rowed, while he played forward for his College Rugby fifteen, and was a member of the London Hospital team which won the hospitals' cup at Richmond in March, 1914. His personal qualities made him popular among the officers and men of his battalion.

MAURICE PATERSON INGLIS, M.B., CH.B. EDIN.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain M. P. Inglis, who was killed in action on Sept. 17th in his twenty-fifth year, was the second son of the Rev. William Balfour Inglis, B.D., of Valparaiso, and

a grandson of Maurice Paterson, LL.D., formerly rector of Moray House Training College, Edinburgh. He was educated at George Watson's College, Edinburgh, entering Edinburgh University, where in 1914 he graduated as M.B., Ch.B. At the outbreak of the war he held a lieutenant's commission in the Royal Army Medical Corps (Special Reserve), and in February, 1915, he went to the front, and towards the close of that year became a captain, having been mentioned in despatches. He met his death while attending to the wounded after a great advance.

Captain Inglis took a keen interest in athletics. At the Scottish Inter-University sports he represented Edinburgh University on several occasions, and was a good high jumper, being runner up in the Scottish high jump championship immediately before the outbreak of the war. He had considerable facility with the pencil, and his cartoons in the *Student* were enjoyed by his teachers and fellow students, with both of whom his frank

and genial disposition made him a general favourite. A letter from the colonel of his regiment speaks of the affection which these qualities produced for him among men and officers at the front. "He was keen and efficient, and always the first to go to the aid of wounded without thought for himself."



THE GARDELEGEN CAMP.

The report on the typhus epidemic at the Gardelegen camp, which has just been issued by the Government Committee on the treatment of British prisoners of war (Wyman and Sons. Cd. 8351. Price 1½d.), based on information provided by three officers of the Royal Army Medical Corps who were there—Major P. C. T. Davy, Captain A. J. Brown, and Captain A. Scott Williams—affords a close parallel to the conditions existing at the same time at Wittenberg. The camp was opened in November, 1914, on an area 350 by 550 yards, and was designed to hold 14,000 prisoners, of whom each company of 300 occupied a hut with about 6 cubic metres space per man. Each hut contained in its breadth four rows of straw palliasses arranged so that laterally they were touching and at the ends only the narrowest passage-way was left between. In February, 1915, the camp contained about 4000 Russians, 6000 French, 700 Belgians, and 230 British, the latter, although relatively few in number, being, by official instructions, mixed in proportionate numbers in each barrack-room. The diet consisted of soup, black bread, and a weekly raw herring, and, until supplemented with supplies sent from home, was so insufficient that the Russian prisoners struggled in the refuse-pit for potato-parings. The men were inadequately clothed: most of the British prisoners had no overcoats, nearly one-half had no boots. The sufferings engendered by insufficient food and clothing were aggravated by the extreme cold of the winter 1914-15, as although two fire-places were provided in each hut, the fuel was quite insufficient. A latrine and urinal were provided for each company under one roof, and the task of emptying the latrines into the tank cars was allotted to the British prisoners until their numbers were too much reduced by sickness to provide a fatigue party of sufficient strength. The water-supply was sufficient, but prior to the outbreak of typhus there were practically no facilities for personal cleanliness; a trough in each compound served for washing person, clothing, and utensils, all entirely without soap. Lice, therefore, swarmed in every garment worn and in all the bedding. The result of these privations was to reduce all the prisoners to a condition of apathetic misery in which their chief occupation was the killing of parasites. At the beginning of February two British medical officers, four French, and four Russians were brought into the camp,

apparently in anticipation of an epidemic, and a few days afterwards, the sickness-rate having mounted to 50 a day, the German medical officer, with his assistant and staff of nursing orderlies, evacuated the camp along with all the German guards, who then formed a cordon around it. The sick were thus left entirely unattended until the imprisoned medical officers devised a complete invalid service. Among the 11,000 prisoners, 2000 cases of typhus occurred, which was fortunately of a milder type than at the other German camps. An epidemic of scarlet fever occurred at the same time. 12 of the 16 doctors in the camp contracted typhus and 2 died. Of the 22 British soldiers who volunteered as orderlies 20 caught typhus and 2 died. No milk was supplied by the German authorities, but the medical officers succeeded in obtaining a supply from the town, which they paid for themselves. Drugs and dressings were scanty, and neither bed-pans nor urinals were available for the sick. With the advent, however, of an elderly German medical officer in civilian dress, towards the end of March, matters began to improve, and finally a large bath-house with disinfectant was installed, but only when the epidemic was spent. The report bears suitable testimony to the splendid work of the British medical officers under circumstances of appalling difficulty. Two have now returned to this country, but Captain Scott Williams still remains, although not at Gardelegen, which no longer contains any British prisoners. The facts of German camp administration speak for themselves; the Committee records its belief that these methods are typical of German prison administration.

CHRONIC DISEASE AND MILITARY FITNESS.

A recent Army Council Instruction in regard to surgical operations for certain conditions seems to have given rise to some misunderstanding. The instruction is confined to those diseases which existed before the war, and which do not render a man unfit for military service. It has been brought to the notice of the authorities that a large number of surgical operations are being performed for chronic conditions which existed previous to joining the Army, and which do not render a man unfit for military service, whereas the operations have frequently been found to render the officer or man unfit for long periods. It is rightly suggested that such operations should not be performed unless there is very good reason to believe that the disability is one which unfits the patient for military service, and that the result of the operation will be speedy restoration to military fitness. The operations referred to include those for certain forms of varicocele, hernia, and chronic nasal conditions, chronic pyorrhoæa, chronic enlargement of the tonsils, flat-foot, deformities of the toes, and chronic abdominal conditions. These instructions will prevent the occupation of beds more urgently required for the sick and wounded returning from the front.

AUXILIARY R.A.M.C. FUNDS.

The following list of donations, totalling just over £731, has been received for the Officers' Benevolent Branch up to Oct. 6th:—

"From a Friend" (per Sir Wm. Osler) £100; Lieut.-Col. W. Collier, Major W. F. Brook, and Lieut.-Col. W. Hale White, each £52 10s.; Lieut.-Col. H. C. Barling, £50; Lieut.-Col. F. W. Westmacott and Major Ewen Maclean, each £21; Major A. C. Farquharson, £20; Capt. A. A. Young, £15; Capt. Hugh F. Wickens, Lieut.-Col. Sir James Barr, Lieut.-Col. Geo. S. Middleton, Capt. Cholmondeley Webb, Major T. K. Monro, Major T. W. Buckley, Capt. Hugh H. Weir, and Lieut.-Col. T. Gowans, each £10 10s.; Surg.-Gen. Sir G. H. Makins, K.C.M.G., C.B., Capt. D. Douglas Crawford, and per Sir William Osler, each £10; Col. Sir J. Rose Bradford, K.C.M.G., C.B., Col. W. Coates, Lieut.-Col. G. A. Bannatyne, Lieut.-Col. Norman Dalton, Capt. Edgar Grey, Capt. V. Rich, Capt. E. F. Buzzard, Capt. H. R. Vachell, Lieut.-Col. Claude Douglas, Capt. R. P. Rowlands, Lieut.-Col. W. F. Haslam, Capt. W. B. Warrington, Capt. A. Blackwell, Lieut.-Col. B. L. Hamilton, Surg.-Col. Atwood Thorne, V.D., Major H. H. Littlejohn, Lieut.-Col. W. Pasteur, Major D. W. Patterson, Major J. W. Leech, Lieut.-Col. W. G. Richardson, Capt. F. W. Wilson, Lieut.-Col. A. M. Martin, Lieut.-Col. H. B. Angus, Dr. A. Duke, Major J. D. Wardale, Major A. Parkin, Major R. P. R. Tyle, and Lieut.-Col. T. Beattie, each £5 5s.; Col. D. J. Mackintosh, M.V.O., Capt. H. H. Kendrick, Capt. H. Gordon Oliver, Capt. H. H. Elliot, Lieut.-Col. H. P. Hawkins, and Lieut.-Col. W. F. Roe, D.S.O., each £5; Capt. Ed. Mackay and Lieut.-Col. Mansell Moullin, each £4 4s.; Capt. T. V. Mills, Capt. Leslie H. Walsh, Lieut. A. P. Gibbons, Lieut.-Col. R. A. Bolam, Capt. T. H. Livingstone, Major F. C. Pybus, Major W. D. Arnison, Capt. H. J. Slade, and Capt. W. T. Harkness, each £3 3s.; Capt. V. H. Blake, Major G. Newton Pitt, Capt. C. E. Droop, Capt. Robert Thompson, Capt. W. Seymour, and Capt. C. F. Armstrong, each £2 2s.; Capt. W. B. Courlay, £2; Major T. S. Toogood, Major W. W. Jones, Capt. Slater, Capt. Menzies, Capt. Lickley, Lieut. P. E. Murray, Lieut. H. O. Wheeler, Lieut. W. B. Anderson, and Lieut. and Qmr. Gibbs, each £1 1s.

ITALY'S "MUTILATI" AND "STORPI."

Our Italy correspondent writes as follows:—Turin, the seat of the great sub-Alpine medical school, has for well-nigh a year been solving the difficult problem of converting the cripples of the war into bread-winning citizens, first by surgical and orthopaedic methods, and next by "re-education" in this or that handicraft, for which special laboratories have been instituted where handicraft or *métier* may be acquired. The Order of Rosmini, for instance, now accommodates more than 100 "mutilati," who are learning to be shoemakers, tailors, bookbinders, accountants, typewriters, telegraph clerks, &c., and its example will soon be followed by other institutions with laboratories specially equipped for the acquisition of other *métiers*. The undertaking is an uphill one in Italy, where the greater number of cripples are peasants with little more than an elementary schooling; but the progress made is reassuring. Much more difficult, however, is the re-education of the "storpi" or functionally impaired. Conservative surgery reduces the number of the "mutilati"; but the "storpi" are much less easily dealt with, besides being more numerous, their numbers being 7000 as against 4000 cripples. There are men who have sustained traumatic lesions of peripheral nerves whose function is thereby, directly or indirectly, paralysed.

A subject may have to be treated with an arm pendulous, so as to be practically an extraneous body; we meet another whose arm is "materially" normal, but in such a state that it can neither be raised nor applied to any use, the man is in fact a "mutilato." Others come before you with a hand normally articulated but with the fingers sensorially dead, or immovable; others again have the joints ankylosed or so stiff that the limb has lost its function. The list of similar cases might be extended indefinitely, including lesions, which, compatible with existence, or even with partial use, or confined to a limited part of the body, leave the subject with a sense of supine resignation to partial deformity, rather than submit to a surgical operation, not severe in itself, but capable of curing him. This happens often enough in the case of the imperfectly educated subject, while equally often he has not the means or the opportunity of resuscitating the suspended function. Many of these "storpi" have been sent to provincial hospitals, where the apparatus for physiotherapeutic treatment is non-existent. How many return home for fear that the resuscitating of the function of the limb may deprive them of the compensation allowed them by the State we wonder.

In France, and lately in England, a great impulse has been given to neurological studies dealing with the case of the "storpi," and admirable indeed is the perfection they have reached in diagnosing and in localising lesions of individual nerves. (I learn this from the columns of French and English papers, both medical and lay.) In Italy such progress is but partially in evidence; though something has already been achieved. There is, for example, the Villa Bondi at Florence, superintended by the nerve specialist, Professor Ettore Levi, where, from the outbreak of the war, the scientific treatment of the "storpi" has been creditably carried out. At Milan, in the neurological department of the "Ospedale," Professor Meda has done good work in this direction; and quite lately from Pavia Professors Sala and Verga have issued a monograph, based on their experiences in the Hospital of the Collegio Borromeo (directed by Camillo Golgi, of antimalarial fame), experiences of signal success in treating the lesions inflicted by firearms on the peripheral nerves. At Turin the military authorities and the civil authorities have already recognised and attempted to carry out the indicated treatment. At the Ospedale Mauriziano, at the Central Military Hospital, and at the San Giovanni Hospital, such treatment has, in part, been initiated. But there is still a want, even in Turin, of a regular neurological department in which a specialist can give his undivided attention to the whole subject, following out the approved methods, collecting all the clinical records illustrative of such cases, and the scientific-practical conclusions obtained at other institutions, foreign as well as Italian. For the filling up of such a want the Turinese school is making laudable efforts, inspired mainly by that veteran clinician and philanthropist Professor Pio Foa, to whose recent manifesto on the subject the reader is referred for data, for the statistics and arguments with which he reinforces his

propaganda are illuminating. True to traditions as the cradle of Italian unity and independence, the sub-Alpine capital cannot but respond to the appeal of its illustrious citizen and so furnish to its provincial, especially its southern, sisters an exemplar to be followed, if not improved upon, in relief of their country's sufferers.

THE SUPPLY OF MEDICINAL GLYCERINE.

As from April 1st, glycerine manufacturers were asked to obtain from buyers a guarantee that all medicinal glycerine delivered would be used only for making up British Pharmacopoeia or B.P. Codex preparations, or where it was prescribed in individual cases, either alone or in combination with other drugs, by a duly qualified medical practitioner. These restrictions were not applied to stocks of glycerine held by wholesalers or retailers prior to April 1st, but in view of the increased necessity for conserving the supply for the needs of the war, and of the possibility that it may be necessary to reduce still further the quantity to be allowed for medicinal purposes, holders of such stocks are now asked to apply the restrictions to them. Such action will directly serve national interests in tending to secure a sufficient supply of glycerine for the general public in those cases where its value for medicinal purposes is of importance.

THE PROBLEM OF THE WAR CRIPPLE.—Sir Alfred Keogh presided last week at a meeting of the Association of Technical Institutions called to consider the problem of training disabled men from the services for useful occupations. He stated that he had long been of the opinion that no movement for this training would be successful unless it had the cooperation of the heads of the technical institutions, and these institutions must be intimately associated with the hospitals. It was true that the Army Council were making arrangements to establish workshops for curative treatment in connexion with the orthopaedic hospitals and dépôts up and down the country, and the opportunity could then be taken of starting the training of men in certain industries. But, he said, the primary object of the hospitals was to get men back to the ranks, and the training of the men unfit for further service must be carried out after their discharge through some such agency as the Association of Technical Institutions. The resources of the Army would be placed at the disposal of the discharged soldier for this purpose.

THE MANOR WAR HOSPITAL.—Mr. A. F. Buxton, chairman of the London County Council, writing from the County Hall, asks for extra comforts, such as books, fruit, stationery, tobacco, and sweets, for the 1200 sick and wounded soldiers who will receive accommodation in the London County Council Manor Asylum, which has been taken over by the War Office. In addition to the gifts in kind which have already been received, personal help and £2000 are required in connexion with a canteen and lodgings for visiting friends. Mrs. A. F. Buxton is the almoner and Miss Constance Toynbee the secretary. The bankers are the Union of London and Smith's Bank. Gifts in kind will be warmly welcomed at the hospital, near Epsom station.

THE AMERICAN WOMEN'S WAR HOSPITAL AT PAIGNTON.—We have received the third report¹ of this hospital dealing with the third thousand cases treated there. The total number of wounded men treated was 359, of whom 205 had pyrogenic infections, 7 an infection with the gas bacillus, 1 with tetanus, 3 with erysipelas. Only 6 amputations were performed, 1 of the thigh, 5 of fingers. Under infectious medical conditions were treated 45 cases of bronchitis, 32 of rheumatism, 16 each of pneumonia and endocarditis, 15 of influenza. Of non-infectious conditions, debility was credited with 56, nephritis with 36, emotional shock with 19, and gas poisoning with 14. Death occurred in 4 cases, 3 surgical and 1 pneumonia. The average stay was 33.4 days. Fifty-eight men were invalided out of the service, 104 were transferred elsewhere for special treatment, 415 to convalescent homes, and 419 to furlough, 10 days being granted for all except enteric cases who are given six weeks. A new massage and electrical department was opened on May 18th, and has given treatments as follows: Massage, 813; electrical, 383; ionisation, 273; and radiant heat, 114. The staff now includes besides the chief surgeon, Dr. Pearce

Penhallow, Dr. H. M. Frost, principal assistant surgeon, Dr. A. J. Casselman, pathologist, and three assistant surgeons.

ROYAL PORTSMOUTH HOSPITAL.—In response to an application from the Assistant Director of Medical Services, Portsmouth, for 60 additional beds for the wounded, the committee of the Royal Portsmouth Hospital, anxious to assist the military in every way consistent with the interests of the civil population, have decided to offer the present out-patients' department and another ward for that purpose. If the proposal is accepted it will necessitate some alterations; the expenses will, it is presumed, be borne by the War Office.

AN AUXILIARY V.A.D. HOSPITAL AT NORWOOD.—Lady Londonderry has opened the Lambeth Auxiliary V.A.D. Hospital at "Homedale," The Avenue, Upper Norwood. The building, which has been lent by Colonel and Mrs. Sleeman, contains 40 beds.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates were successful:—

Surgery.—H. St. H. Vertue (Sections I. and II.), Oxford and Guy's Hospital.

Medicine.—W. Burridge (Section II.), Oxford and Guy's Hospital; R. F. Jarrett (Section II.), London Hospital; O. A. Mortlock-Brown (Section II.), Royal Free Hospital; R. H. Pettersson (Section I.), St. George's Hospital; M. M. Shafi (Sections I. and II.), London Hospital; I. H. Syed (Sections I. and II.), Bombay and Manchester; S. L. Szpligner (Section II.), London Hospital; S. C. Varley (Sections I. and II.), Oxford and St. George's Hospital; and A. G. E. Wilcock (Sections I. and II.), Cambridge and St. George's Hospital.

Forensic Medicine.—S. C. Ho, Cambridge and London Hospital; and W. Stansfield and B. Walley, Manchester.

Midwifery.—D. D. Hearn, Durham.

The diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery:—

W. Burridge, R. F. Jarrett, S. C. Varley, and H. St. H. Vertue.

EXAMINING BOARD OF THE ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following are the results of the Triple Qualification Examinations:—

FIRST EXAMINATION.

Pauline Figlor, Andrew Gold, Arthur William Hodder Noble, John Murray, and Thomas Hall James Douglas.

Physics.—Sayed Ghaleb, Demetrius Maurice O'Flaherty, and John Leo King.

Biology.—Demetrius Maurice O'Flaherty and Eric Edward Macpherson Steen.

SECOND EXAMINATION.

Joseph Black, Jane Copas, H. A. Madman, Jacob Johannes Van Niekerk, Andre Antoine Lamsletle, Jung Bahadur Singh, and Joseph Campbell.

Anatomy.—Alexander Forayth Caddell, James Charles Meek, and Andrew Wood Smith.

Physiology.—Thomas Richard O'Keefe, Thomas Francis Kelly, and Thomas Hall James Douglas.

THIRD EXAMINATION.

Bliza Jean Stuart, John Bourke, Albert Ernest Hempleman, Thomas Lloyd Edwards, Hugh McIlroy, Arukatti Patabendige Frederick Abeyuriya, Harold Gengoult Smith, Robert Pollock, and Albert Sandelson.

Pathology.—Andrew Francis Brigmen and Albert Herbert Brooke Hudson.

Materia Medica.—Hugh William Howatson, Arthur Stanley Hughes, Richard Gordon Bell, and Reginald Leslie Wright.

FINAL EXAMINATION (L.R.C.P. & S. EDIN., L.R.F.P. & S. GLASG.).

Reginald John Thomas Malcolm-Gasper, Spearman Charles Swinburne, William John Mitchell White, Edgar Annequin, Stanley Wall Hoyland, Martha Hunter Hoshing, Charles George Booker, Herbert Ainslie Grant Dykes, Janie Isabel McBurnie, Edward Mervyn Lewis Morgan, Paul Lucien Manuel, Harry Morley, Reginald Vincent Clarke, Robert McGregor, Owen Glendower Evans, Edwin Butler, and Robert Woodside.

Medicine.—Yeshwant Narayan Kadam, Edward Glyn Jones, William Fuller Mason, and John Joseph Mulvey.

Midwifery.—Yeshwant Narayan Kadam, William Fidler Mason, Russell Neilham Burton, and Wendell Thomas Garretson.

Medical Jurisprudence.—Cecl Vale Samwell, Indranarayan Borrah, William Clie Desmond Longford, George Nicol Groves, Thomas Robert Wilson, Henry Shaw, Don Adrian Jaysinghe, Robert McLaren, Patrick Aloysius O'Brien, and Wendell Thomas Garretson.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College held on Oct. 19th, the following gentlemen having passed the requisite examinations between July 3rd and 5th, were admitted Fellows:—

Matthew Leslie Guy Hallwright, M.R.C.S., L.R.C.P. Lond. M.D. Durh., Captain, New Zealand Medical Corps; Maurice Horan,

¹ The first report was noticed in THE LANCET of Oct. 23rd, 1915, p. 949, and the second on Feb. 12th, 1916, p. 380.

M.B., B.Ch. Dub., Great Northern Central Hospital, London; William Outhbert McGaw, M.B., Ch.B. New Zealand, Captain, New Zealand Medical Corps; James McHoul, M.B., B.S. Glasgow, Captain, R.A.M.C. (T.); John Daniel Milne, M.B. Toronto, M.R.C.S., L.R.C.P. Lond., Lambeth, Ontario, Canada; Hamish Nicol, M.R.C.S., L.R.C.P. Lond., London; Arthur Charles Oldham, L.R.C.S. Edin., Major, R.A.M.C. (T.), Kildermister; and George Lionel Preston, M.R.C.S., L.R.C.P. Lond., Saltash, Cornwall.

ROYAL SOCIETY OF MEDICINE.—Before the Section of Surgery on Oct. 31st, at 5 P.M., Dr. Sherman, of Pittsburg, U.S.A., will deliver a lecture on the "Sterilisation of Wounds by the Method of Carrel," with epidiascope demonstration.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).—The University Scholarship in Anatomy and Physiology has been equally divided, and awarded to L. M. Moody and H. T. Rymer.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON).—Entrance Scholarships in Science have been awarded as follows: "Price" Science Scholarship (value £100), R. A. Madgwick; Entrance Scholarship in Science (value £50), D. Hunter.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—Dr. Hector Mackenzie will deliver the Bradshaw lecture on Exophthalmic Goitre on Nov. 2nd; Dr. H. R. Dean the Horace Dobell lecture on the Mechanism of the Serum Reactions on Nov. 7th; and Dr. W. H. R. Rivers the FitzPatrick lectures on Medicine, Magic, and Religion (Part II.) on Nov. 14th and 16th. The lectures are open to all members of the medical profession, and begin in each case at 5 P.M.

THE LATE DR. OLIVE CLAYDON.—In the brief notice of the career of Dr. Olive Claydon which appeared a fortnight ago it should have been mentioned that it was principally due to her initiative that the Friendly Societies decided to modify their regulations so as to allow patients incapacitated for work by venereal disease to receive sickness benefit.

WAR GRANT TO PANEL CHEMISTS.—An additional war allowance of 0.3d. per prescription has been granted to panel chemists by the National Health Insurance Joint Committee for the year 1917, as well as retrospectively for the whole of the year 1916, conditional upon a satisfactory pharmaceutical service being secured for the coming year.

Mr. Frank Kidd, assistant surgeon to the London Hospital, will deliver a course of lectures on "Diseases of the Male Urethra" in the clinical theatre of the hospital on Mondays, Nov. 13th, 20th, 27th, and Dec. 4th, at 4 P.M.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Sale of Cocaine.

A LARGE number of Members of the House of Commons have placed on the notice paper the following motion: "That in the opinion of this House the special permit granted by the Secretary of State for the Home Department to unregistered practitioners in dentistry to purchase and use solutions containing not more than 1 per cent. of cocaine for the purposes of local anaesthetics up to Oct. 31st, 1916, should be extended for a further period of six months."

Medical Men Serving as Combatant Officers.

Mr. FORSTER, Financial Secretary to the War Office, has now stated in the House that any hardship arising in the case of a medical man serving as a combatant officer will receive his consideration.

HOUSE OF COMMONS.

WEDNESDAY, OCT. 18TH.

Alcohol in Military Hospitals.

Major CHAPPEL asked the Financial Secretary to the War Office whether, in view of the fact that Guy's Hospital had reduced the cost of alcohol administered to patients from £1576 per annum to £151, Leeds Infirmary from 6s. 6d. per head per annum to 2d., and Wandsworth Infirmary from 5s. 3d. per head per annum to one-half of 1d., he would cause inquiry to be made as to whether the mortality or length of time in hospital had in these institutions increased in consequence, in order that the War Office might be in a position to advise military hospitals, in the interest of economy, rapid convalescence, and the ultimate sobriety of our men.—Mr. FORSTER wrote in reply: Economies in the issue of stimulants and of all other hospital supplies have been receiving the careful attention of a special committee under the presidency of Major Godfrey Collins, M.P., and the amount of alcohol is limited to what is medically necessary.

Price of Milk.

Answering Mr. SUTTON, Mr. PRETYMAN (Parliamentary Secretary to the Board of Trade) said: I am in agreement with the views expressed by speakers who represent agricultural interests, that the increases in the expenses of dairy farming have not been so great as to justify a contract price for milk higher than 1s. 4d. per imperial gallon at the London stations and corresponding prices in other large towns. Outside the large towns prices should be on a lower level than this. The possibility of taking steps to secure a limitation of price to this figure without reducing the supply of milk is engaging the careful attention of the Board of Trade and the Board of Agriculture. It is hoped that dealers will succeed in resisting demands for higher prices in any purchases that remain to be made. In any case it is proposed to take immediate steps by legislation, if necessary, to carry out the recommendation of the Departmental Committee on Prices to obtain information as to milk contracts and the prices paid.

Medical Treatment of Discharged Soldiers.

Mr. NUGENT asked the representative of the National Insurance Commissioners what arrangements, if any, were made for the treatment of discharged sailors and soldiers who were insured persons in the United Kingdom; and, in view of the fact that medical benefit did not apply to Ireland, would he make arrangements with either the Irish Insurance Commission or Approved Societies and empower them to make the necessary arrangements for discharged and disabled sailors and soldiers to receive the necessary medical treatment.—Mr. C. ROBERTS wrote in reply: In Great Britain these men receive medical benefit under the ordinary arrangements. As regards Ireland, the matter is one which concerns primarily the Statutory Committee on Pensions, who are carefully considering the matter.

THURSDAY, OCT. 19TH.

Invalid Civilian Prisoners in Britain and Germany.

Answering Mr. MALCOLM, Mr. FORSTER said: As the transfer of German invalid civilians interned in this country to Switzerland would be a matter of considerable difficulty, a scheme is now under consideration for the mutual repatriation of such invalids from this country and Germany on somewhat the same lines as to the method of selection and schedule of invalidity as now obtain for the transfer of combatant prisoners of war to Switzerland.

Medical Treatment of Disabled Sailors and Soldiers.

Mr. HOGGE asked the Parliamentary Secretary to the Local Government Board whether he could give the House the text of the agreement drawn up between the Statutory War Pensions Committee and the Insurance Commissioners for a scheme of medical treatment, including specialist advice, for all disabled sailors and soldiers.—Mr. HAYES FISHER replied: As the scope of the agreement and its terms are not yet finally settled, I fear it is not possible for me to comply with the suggestion in the question.

T.N.T. Poisoning.

Answering Lord HENRY CAVENDISH-BENTINCK in regard to two deaths of female munition workers from T.N.T. poisoning, Mr. BRACE (Under Secretary for the Home Department) wrote: The Home Office has received reports with regard to these two cases. In the case of one of the women, who was not an employee of the firm but an examiner sent to the works on behalf of the Government, the usual precautions had, through a misunderstanding as to her position, not been carried out. In the other case also the doctor appointed for the factory, although a full-time officer, had not been able, owing to the amount of work to be done, to carry out the full periodical examination of the workers. Both defects have now been remedied. The question of T.N.T. poisoning is receiving the close attention of the Home Office and the Ministry of Munitions, and special measures have been taken for dealing with it. Further modifications of the regulations are under consideration. The problem is a new one, and is made more difficult by the fact that the manufacturing processes are constantly being modified. The precautions which are now required or under consideration include all the measures which the experience so far obtained suggests, and further investigations and experiments with new methods and appliances are being made.

TUESDAY, OCT. 24TH.

The Sale of Cocaine.

Mr. RAFFAN asked the Under Secretary for the Home Department how many prosecutions had taken place for violation of the Order in Council prohibiting the sale of cocaine for improper purposes; and in how many cases, if any, the source of supply had been traced to dental practitioners, either registered or unregistered.—Mr. BRACE replied: There have been 25 prosecutions in the metropolitan police district for the violation of this Order in Council. In none was the source of supply traced to a dental practitioner. I have no information as to the number of prosecutions outside the metropolitan police district.

Experiments on Living Animals.

SIR GEORGE GREENWOOD asked the representative of the National Insurance Commissioners whether the experiments upon living animals with chlorine gas performed by Dr. Flack in the laboratory of the Medical Research Committee between July 2nd and 22nd, 1915, were paid for by moneys provided by Parliament out of the general taxation of the country under the National Insurance Act; whether his attention had been called to the nature of these experiments; whether such experiments were correctly described in the annual returns as experiments in the nature of simple inoculations, hypodermic injections, and similar proceedings, and as experiments not involving a serious operation; whether they were performed under a scheme of medical research prepared by the Medical Research Committee under the National Insurance Act; and whether he would lay a copy of any such scheme upon the table of the House.—MR. CHARLES ROBERTS (in a written answer) replied: The answers to the first, second, and third paragraphs of the question are in the affirmative. In reply to the fourth paragraph, I may say that schemes approved by the chairman of the Joint Committee under Section 7 (1) of the Regulations would not include details of the particular manner in which, or the particular experiments by help of which, a given scheme of research is to be carried out. In the present case the work was sanctioned as a piece of research which was necessary for the solution of certain medical questions of immediate national urgency in the war conditions of July, 1915, but which was also likely to produce knowledge of the greatest value in medical work for the civil population. In reply to the fifth paragraph, I would refer the honourable Member to paragraph (f) on p. 20 of the report of the Committee for 1914-15 presented to Parliament last year.

T.N.T. Poisoning;

MR. ROWLANDS asked the Under Secretary for the Home Department whether his attention had been called to two inquests on women who died of T.N.T. poison; could he say how many deaths from the same cause had occurred during the past three months, and what action was being taken to prevent these disasters.—MR. BRACE replied: The Home Secretary's attention has been called to both these cases. During the quarter ending Sept. 30th the number of reported deaths from the same cause was 21. The Home Office and the Ministry of Munitions are taking every possible step to investigate and deal with this new source of danger.

WEDNESDAY, OCT. 25TH.

The Sale of Cocaine.

MR. RAFFAN asked the Home Secretary whether it was in contemplation to extend the general permit enabling unregistered practitioners in dentistry to obtain solutions containing not more than 1 per cent. of cocaine for purposes of anaesthetics beyond Oct. 31st; and, if so, to what date.—MR. H. SAMUEL replied: I have promised to appoint a small committee to make further inquiries, pending which the temporary permits issued to unregistered dental practitioners will be extended.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

- ADAMS, ALFRED, M.B., B.Ch. Oxon., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer of Health for Looe (Cornwall).
COLCLOUGH, W. F., M.D. Cantab., Certifying Surgeon under the Factory and Workshop Acts for the Sidmouth District of the county of Devon.
GLEN-BOTT, M., M.R.C.S., L.R.C.P., and PARKINSON, K. H., M.R.C.S., L.R.C.P., House Surgeons to the Royal Free Hospital.
KRUK, Malame, M.D., Assistant Anaesthetist to the Royal Free Hospital.
MACKAY, HELEN M., M.B., B.S. Lond., and MATLAND, A. M., M.R.C.S., L.R.C.P., House Physicians to the Royal Free Hospital.
PRING, C. H., L.S.A., to serve as a Medical Practitioner upon the Insurance Committee for the County of London.
SMITH, MIALI, M.R.C.S., L.R.C.P., Senior Obstetric Physician to the Royal Free Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

- BARNLEY, BECKETT HOSPITAL AND DISPENSARY.—House Surgeon Salary £250 per annum, with board, &c.
BRIMMINGHAM CITY EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary £300 per annum.
BRISTOL ROYAL INFIRMARY.—House Physician. Salary at rate of £120 per annum, with board, &c.

- BURY INFIRMARY.—Senior House Surgeon. Salary £250 per annum, with board, &c.
CAMBRIDGESHIRE ASYLUM, Fulbourn, near Cambridge.—Junior Assistant Medical Officer, unmarried. Salary £200 per annum, with board, &c.
DUDLEY, GUEST HOSPITAL.—Senior Resident Medical Officer. Salary £150 per annum, with board, &c. Also Assistant House Surgeon, for six months. Salary £120 per annum, with board, &c.
HACKNEY METROPOLITAN BOROUGH.—Two Temporary Medical Officers for one attendance of two hours per week, in connexion with Council's Infant Welfare Centres. Salary at rate of 10s. per hour.
HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas.
ISLEWORTH UNION INFIRMARY.—Temporary Assistant to Medical Superintendent. Salary £375 per annum, with rations, &c.
LEICESTER ROYAL INFIRMARY.—Pathologist to Infirmary and Venereal Diseases Section. Salary at rate of £500 per annum. Also Medical Officers in Charge of Clinics and Beds. Salary £200 for Male Officer and £150 for Female Officer. Also Vacancy on Resident Surgical Staff. Salary £250 per annum.
LONDON LOCK HOSPITAL (MALE), Dean-street, Soho, W.—House Surgeon for six months. Salary at rate of £150 per annum.
LYONS' RED CROSS HOSPITAL.—Assistant Surgeon. Salary 25s. per week and all found.
NEWCASTLE-UPON-TYNE AND NORTHUMBRIAND SANATORIUM FOR CONSUMPTIVES, Barrasford, North Tyne.—Resident Medical Officer.
NOTTINGHAM GENERAL HOSPITAL.—Two House Physicians and One Assistant House Surgeon for six months. Salary at rate of £250 per annum each, with board, &c.
PRESTON, LANCs. COUNTY ASYLUM, Whittingham.—Locum Tenens, unmarried. Salary £7 7s. per week, with board, &c.
ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Dental Surgeon.
SALFORD UNION INFIRMARY, Hope, Pendleton, near Manchester.—Female Assistant Resident Medical Officer. Salary £250 per annum, with board, &c.
SHEFFIELD, JESSOP HOSPITAL FOR WOMEN.—Female Junior House Surgeon, unmarried, for Gynaecological and Maternity Departments. Salary £200 per annum, with board, &c.
SHEFFIELD, ROYAL INFIRMARY.—Two House Surgeons. Salary £100 per annum, with board, &c.
SHEFFIELD UNION HOSPITAL, Firvale.—Resident Assistant Medical Officer. Salary £400 per annum, with rations, &c.
SOUTH LONDON HOSPITAL FOR WOMEN, 103, South Side, Clapham Common, S.W.—Female House Physician and House Surgeon for six months. Salaries at rate of £100 per annum, with board, &c. Also Temporary Female Assistant Physician to Children's Department.
VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST ON THE SEPARATE PRINCIPLE.—Assistant Resident Medical Officer.
WALSALL AND DISTRICT HOSPITAL.—Assistant House Surgeon and Anaesthetist. Salary £150 per annum, with board, &c.
WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—Resident Medical Officer for six months. Salary at rate of £150 per annum, with board, &c.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Valencia and Rathmore, in the county of Kerry.

Births, Marriages, and Deaths.

BIRTHS.

- DAVIS.—On Oct. 23rd, at Upper Berkeley-street, W., the wife of K. J. Aetion Davis, F.R.C.S., M.C.—a daughter.
NICHOLLS.—On Oct. 20th, at Wellesley Lodge, Croydon, the wife of Dr. G. E. E. Nicholls, Temporary Lieutenant, R.A.M.C.—a son.
PATTERSON.—On Oct. 20th, at Harley-street, the wife of Norman Patterson, F.R.C.S.—a daughter.

MARRIAGES.

- BYE-BRITTON.—On Oct. 21st, at the Chapel Royal, Savoy, Norman Huthance Bye, F.R.C.S.E., to Edith Mary, only daughter of the late George Britton, of Putney and Hastings.
DRENNAN-DUDGEON.—On Oct. 19th, at All Saints Church, Blackrock, Dr. Charles Edward Drennan to Rose, second daughter of Mr. and Mrs. Dudgeon, of The Priory, Stillorgan.
FRASER-ARMSTRONG.—On Sept. 14th, at the Cantonment Church, Melkita, Burma, Captain A. D. Fraser, R.A.M.C., to Emily Clara, only daughter of the Rev. W. D. H. Armstrong, Berrow Vicarage, Somerset.
SHERMAN-BROOKE.—On Oct. 23rd, at St. Alfege, Greenwich, Captain Reginald Sherman, R.A.M.C., to Dorothy Raffles, elder daughter of J. Raffles Brooke and Mrs. Brooke, Osborne House, Formby, Lancs.

DEATHS.

- THOMSON.—On Oct. 21st, at Lowestoft-road, Gorleston-on-Sea, David Thomson, L.R.C.P. & S. Edin., L.F.P.S. Glasg., aged 55.
WATERS.—On Oct. 14th, at Dorset-road, Bexhill-on-Sea, Avery Clough Waters, M.B., J.P., late of Whitegates, Southend-on-Sea, aged 54 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

The following journals, magazines, &c., have been received:—*Annales de l'Institut Pasteur*, *Journal of Comparative Pathology and Therapeutics*, *Journal of Laryngology, Rhinology and Otolaryngology*, *New Zealand Medical Journal*, *St. Mary's Hospital Gazette*, *Archives of Radiology and Electro-therapeutics*, *American Journal of Medical Sciences*, *American Journal of Obstetrics*, *American Journal of Surgery*, *Nordiskt Medicinskt Arkiv*, *British Journal of Children's Diseases*, *American Journal of Orthopedic Surgery*, *Saint Paul Medical Journal*, *American Medicine*, &c.

Notes, Short Comments, and Answers to Correspondents.

"AN IMPORTANT DISCLAIMER."

THE post remarked that "some men are born to fame, some men acquire it, and some have honours thrust upon them." Mr. Eustace Miles (M.A. Cambridge) has for many years been in the second class as a champion racket and tennis player and as the owner or conductor of a restaurant bearing his name. He is now, as we learn from a document which lies before us, the title of which we have borrowed, in the third class. To quote his own words, he "in view of the letters that he has received addressed to him as 'Dr. Eustace Miles,' wishes to make it clear—in order to prevent misunderstanding—that he is not a qualified Medical Practitioner; and that—while he appreciates at its true value the special training and hard work of the medical profession—he himself advises people rather as to simple methods of cure (through Diet, &c.) which most Doctors have not (like himself) studied and practised assiduously and effectively for years. He does not undertake to prescribe heavy doses of drugs nor to operate." His medical position has been thrust upon him.

We learn further from the "important disclaimer" that for a good many years Mr. Miles "has been professionally advising consultants (including qualified medical practitioners, who sometimes consult him about their own diet, or the diet of their patients)," and that he advises on such matters as Diet, simple Water Treatments, simple Mental Helps, &c. He likes to have full particulars and the medical opinions on each case, and "he then himself prepares a written Health Course or Diet Course, preferably after a Personal Interview (lasting for half an hour or more) with or without an Examination of the Blood, Urine, &c., by a leading Clinical Analytical Expert." The expert, we are informed in another document, is a Mr. Collings, who is there described as "the greatest living Expert." Mr. Miles, however, appears to be willing to give advice by correspondence without the personal interview and without the analytical examination, and we observe that in his tariff of fees "the Full Health Course by Correspondence" costs 2 guineas.

If Mr. Miles is well advised he will stop trying to do work which only a properly trained medical man should do; for despite his disclaimer he is acting in a medical capacity. No one but a medical man has the knowledge necessary to prescribe diets, or exercises, or water treatments upon information acquired from examinations of the blood, urine, or excreta, as no one but a medical man can understand the significance of the information. Mr. Miles's action may not be illegal as the law stands, and unqualified advisers on health have a singular attraction for many minds, but both he and his patients are taking grave risks.

THE PROLIFICITY OF OPPOSITE TWINS.

To the Editor of THE LANCET.

SIR,—The belief mentioned by "H. S. S." in your issue of Oct. 21st has probably arisen from the experience of cattle-breeders. The name "free-martin" was given by Bewick to a cow-calf twin-born with a bull-calf. It has been known from ancient times that she usually proves barren. The subject has been studied by Spiegelberg (1861), Dr. Berry Hart, and Professor Bateson. Sterile free-martins occur only rarely in sheep (Bateson). A clue to the understanding of this subject has recently been given by the paper of Professor Frank R. Lillie, entitled "The Theory of the Free-martin" in *Science*, 1916, N.S. xliii., April 28th, pp. 611-613. He finds that in cattle a twin pregnancy is almost always a result of the fertilisation of an ovum from each ovary; development begins separately in each horn of the uterus; the ova meet and fuse in the small body of the uterus at some time between the 10 and 20 mm. stage. The blood-vessels from each side then anastomose in the connecting part of the chorion. A particularly wide arterial anastomosis develops so that either foetus can be injected from the other. The arterial circulation of each also overlaps the venous territory of the other, so that a constant interchange of blood takes place. If the twins be hetero-sexual the reproductive system of the female is largely suppressed, and certain male organs even develop in the female. This is unquestionably to be interpreted, he says, as a result of hormone action. It is uncertain whether the invariable result of sterilisation of the female at the expense of the male is due to more precocious development of the male hormones or to a certain natural dominance of male over female hormones. Lillie found in a fertile cattle free-martin that the two chorions were entirely unfused; thus he

explains the existence of the fertile free-martin. The sterile free-martin is sterilised at the very beginning of sex-differentiation, and for a long time afterwards male hormones circulate in the blood. Yet, in spite of this, the reproductive system is for the most part female though greatly reduced. Further work is promised by Lillie. If man resembles cattle in this matter then the case mentioned by you forms an exception to the rule. It would be difficult to prove that a sterile "human free-martin" is sterile because of her hetero-sexual twin-birth, for the causes of sterility in women are many. But the question for the statistician is, "Are most human free-martins sterile?"

I am, Sir, yours faithfully,
LEONARD J. KIDD.

P3.—I have given Professor Lillie's description almost verbatim.

THE CONCERTED STUDY OF ENDOCRINOLOGY.

WE have received No. 1, Vol. I., of a publication entitled *The Link between Members of the Association for the Study of the Internal Secretions*. The editor, Dr. Henry K. Harrower, of Los Angeles, provides "medical editors" with some editorial paragraphs for them to employ if they desire, or improve upon in their "own words and style." These paragraphs tell us that the association has been inaugurated with the object of correlating the work of physicians and other students of endocrinology in different parts of the world. We learn that "the charter membership includes nearly 300 physicians in every branch of medical practice, and many of those laboratory workers who are delving into the fascinating mysteries of this field." A scientific bulletin is to be published containing a resume of the work done in this "ever broadening and highly profitable study." The concerted study of the internal secretions may lead to a concerted demand for pharmaceutical preparations of these secretions which may make the study a "highly profitable" one in certain directions, but on broader lines we fail to see much in the programme of promise to scientific medicine. We do not know how the accepted leaders of medical thought in the United States may estimate the movement, as their names do not appear in "the list of applications for charter membership." On the inducement supplied by Vol. I., No. 1 of *The Link*, &c., we cannot recommend our readers to support the movement pecuniarily.

BALACLAVA SURVIVORS' RELIEF FUND.

THAT the hardships of military campaigns are not incompatible with long life is shown by the presence among us of survivors of the charge of the Light Brigade in 1854, the anniversary of which occurred on Wednesday, Oct. 25th. As these heroes must have long passed the age allotted to man by the Psalmist, it is gratifying to know that the needy among them and the widows of those who are dead are being cared for by the Fund which was founded for this purpose in 1897 by the late Mr. T. H. Roberts. But the money in hand is now nearly exhausted. An earnest appeal is being made for immediate financial aid, and donations and subscriptions can be sent to the treasurer, Mr. H. Wyndham Down, the manager of the London and South-Western Bank, Fleet-street, E.C., or to the honorary secretaries, 66, Hatton-garden, E.C. All services in connexion with the administration of the Fund are given free.

THE MEDICAL SERVICE OF THE FRENCH ARMY IN 1849.

THE following figures from the *Annuaire Militaire de la République Française* for 1849 are interesting as affording a comparison with those of the present day (best known to our gallant Ally). The ordonnance of Oct. 19th, 1841, fixed the "cadre constitutif" or the nucleus of units of the "Officiers de Santé" (officers of the Army Medical Service) as follows on a peace footing: A total effective of 1377 officers, of which 127 were Médecins, 1137 chirurgiens, and 113 pharmaciens. The 127 doctors comprised 2 inspecteurs, 14 principaux, 66 ordinaires, and 45 adjoints. The 1137 chirurgiens comprised 2 inspecteurs, 24 principaux, 249 majors, 402 aides-majors, and 460 sous-aides. The 113 pharmaciens comprised 1 inspecteur, 10 principaux, 36 majors, and 66 aide-majors. The surgeons, it will be seen, were nearly ten times as many as the "doctors." The Conseil de Santé des Armées, which then sat at the Ministry of War in the rue Saint-Dominique, No. 82, consisted of five members—that is, two médecin-inspecteurs, two chirurgiens-inspecteurs, and one pharmacien-inspecteur. Their names were Alquié, Vaillant, Bégin, Pasquier, Brault, Baudens (a coöpted member), and Judas, secretary. The Minister for War at the time was Joseph Marcellin Rullière, who was appointed on Dec. 22nd, 1848. In THE LANCET of Feb. 6th, 1909, we published an annotation which is of added interest to-day, on "The Medical Department of the French Army: its Evolution and Campaigns

from 1708 to 1882." In 1849 Magendie, the famous surgeon, curiously enough, had an official job with 11 others in looking after the horses (Commission d'Hygiène Hippique) of the French Army and not the men. The relative value of horses and men at that time may now be food for historical cogitations; but nowadays we have automobiles, and it is the petrol supply which is food for thought.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Papers: Prof. H. Lamb: On Waves in an Elastic Plate.—Prof. W. H. Young: (a) On Multiple Integrals; (b) On the Order of Magnitude of the Coefficients of a Fourier Series.—Mr. T. C. Sutton: A Determination of the Heat of Vapourisation of Water at 100° C. and 1 Atmosphere Pressure in Terms of the Mean Calorie (communicated by Dr. E. H. Griffiths).—Mr. G. H. Livers: On the Mechanical Relations of the Energy of Magnetisation (communicated by Sir Joseph Larmor).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Oct. 31st.

PSYCHIATRY (Hon. Secretaries—Bernard Hart, G. F. Barham): at 8.30 P.M.

Presidential Address:

Dr. R. Percy Smith: Mental Disorders in Civilians arising in Connexion with the War.

Wednesday, Nov. 1st.

OPHTHALMOLOGY (Hon. Secretaries—Elmore W. Brewerton, Arthur W. Ormond): at 8.30 P.M.

Card Case:

Mr. G. Winfield Roll: Congenital Pigmentation of the Optic Disc.

Papers:

Lieut.-Colonel and Mrs. R. H. Elliot: The Photography of Macroscopic and Microscopic Eye Specimens.
Dr. Frank Taylor and Mr. Fleming: Bilateral Glioma of the Retina with Multiple Metastases.
Mr. Arnold Lawson: Notes on (1) A Case of Recurrent Glioma of the Retina; (2) Three Cases of Fur Infection of the Conjunctiva.

Thursday, Nov. 2nd.

OBSTETRICS AND GYNÆCOLOGY (Hon. Secretaries—H. Russell Andrews, T. G. Stevens): at 8 P.M.

Special Discussion:

On "The Need for Improvement in the Care of Pregnant Women."

Dr. S. G. Moore (Huddersfield) will introduce the discussion and the different sections will be opened by the following:

Dr. Amand Routh: The Importance of getting all Pregnant Women under Supervision and affording them the Necessary Treatment.

Dr. Comyns Berkeley: The Importance of getting Medical Practitioners and Midwives to Co-operate with the Local Health Authorities.

Lady Barrett: The Importance of linking up all Organisations for Maternity and Child Welfare in Local Health Districts.

The following will take part in the discussion: Professor Briggs, Sir Francis Champneys, Dr. Bardley Holland, Professor Munro Kerr, Dr. Maclean, and Miss Rosalind Paget.

Friday, Nov. 3rd.

LARYNGOLOGY (Hon. Secretaries—Cecil I. Graham, Frank A. Rose): at 4 P.M.

Cases and Specimens:

Dr. Dan McKenzie, Dr. John McKeith, Dr. Wyatt Wingrave, Dr. Irwin Moore, Mr. Stuart Low, Sir St. Clair Thomson, and others.

ANÆSTHETICS (Hon. Secretaries—F. E. Shipway, Ashley S. Daly): at 8.30 P.M.

Communications:

Mr. W. M. Mollison: Successful Case of Heart Massage following Heart Failure under an Anæsthetic.

Dr. M. S. Pembrey and Dr. F. E. Shipway: Observations on the Composition of Air under Masks during Ether Anæsthesia.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith-road, W.

FRIDAY.—8 P.M., Clinical Meeting. Cases from the Hammersmith Military Orthopaedic Hospital will be shown by Major Morgan (for Mr. Trethowan), Captain N. Dunn, Captain Elmslie, and Mr. M. Aitken, who will also show some Lantern Slides. Cases will also be shown by Members of the Staff of the Fulham Military Hospital, and others.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

THURSDAY.—5 P.M., Bradshaw Lecture:—Dr. H. Mackenzie: Exophthalmic Goitre.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynecological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham); Gynecological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. E. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynecological Operations (Dr. A. E. Gilles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

ST JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—6 P.M., Dr. W. K. Sibley: Eczema and its Treatment.

THURSDAY.—6 P.M., Chesterfield Lecture:—Dr. M. Dockrell: Lichen and Lichenification.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

CHADWICK PUBLIC LECTURES.

THURSDAY (at the Norwich Museum).—3 P.M., Dr. C. Porter: The Health of the Future Citizen—Lecture I., Motherhood and the Care of the Mother (illustrated with lantern slides).

FRIDAY (at the Lecture Room of the Royal Society of Arts, John-street, Adelphi, W.C.).—5.15 P.M., Professor William Stirling: Fatigue, and its Effects on Industry and Efficiency—Lecture II.: Some Industrial Aspects of Fatigue (illustrated with lantern slides).

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Oct. 25th, 1916.

| Date. | Barometer reduced to Sea Level and 32° F. | Direction of Wind. | Rain-fall. | Radiation in Vacuum. | Max. min. Temp. Shade. | Min. Temp. Bulb. | Wet Bulb. | Dry Bulb. | Remarks. |
|---------|---|--------------------|------------|----------------------|------------------------|------------------|-----------|-----------|----------|
| Oct. 19 | 29.966 | N. | ... | 91 | 56 | 51 | 48 | 51 | Cloudy |
| " 20 | 30.300 | N.E. | ... | 60 | 50 | 43 | 43 | 47 | Cloudy |
| " 21 | 30.120 | S.E. | ... | 82 | 50 | 37 | 37 | 39 | Hazy |
| " 22 | 29.920 | S.E. | ... | 84 | 52 | 39 | 37 | 39 | Cloudy |
| " 23 | 29.880 | S. | ... | 93 | 60 | 39 | 50 | 52 | Cloudy |
| " 24 | 29.760 | S.W. | 0.03 | 80 | 57 | 50 | 51 | 52 | Cloudy |
| " 25 | 30.234 | S. | 0.08 | 63 | 56 | 50 | 50 | 51 | Raining |

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It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

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V.—Messrs. J. W. Vickers and Co., Lond.; Dr. V. Vogt, Yi Yang; Virol, Ltd., Lond.; Secretary of.
W.—Dr. F. Williams, Llanelli; Captain F. Wright, R.A.M.C.; Messrs. Watson and Sons, Lond.; Messrs. Whiffen and Sons, Lond.; Warrington Infirmary, Secretary of; Messrs. Whiteley, Lond.; Messrs. W. J. Wilcox and Co., Lond.; Wounded Allies Relief Committee, Lond.; W. D. H.

Presidential Address

OR

THE POSSIBLE FUNCTIONS OF THE CEREBRO-SPINAL FLUID.

Delivered before the Neurological Section of the Royal Society of Medicine on Oct. 26th, 1916,

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LADIES AND GENTLEMEN.—So much has within recent years been written about the cerebro-spinal fluid that I must apologise for my want of originality in selecting that subject for this address. But however hackneyed the subject, we are still far from possessing complete knowledge as to the functions and significance of the fluid. From the pathological as well as from the physiological point of view, we at least know that this remarkable fluid is one of the greatest importance, and its careful examination in many diseases has yielded results of inestimable value. During the last few years it is a subject at which I have myself worked, and I have been fortunate in securing as my collaborator such a skilful and accurate experimenter as my colleague Professor W. E. Dixon, F.R.S.

One cannot work at any subject for any length of time without speculating beyond actually observed data. It is the safest rule to keep ideas of this nature to oneself, but there are some occasions when it is permissible to speak rather more freely; this is one of them. I happen to be the unworthy occupant of a presidential chair, and for an hour or less I shall be free from contradiction and criticism, so I propose to inflict upon you during that time some speculations, and have only safeguarded myself in the title of this address by alluding to the functions of the fluid as possible rather than probable. As my colleague Dixon is away on war service, I have had no opportunity of discussing the matter with him, so that if I say anything that is wildly improbable he, at any rate, is free from responsibility.

I shall dwell on the subject from the physiological rather than from the pathological standpoint, but I trust that what I have to say will be found of interest to the pathologist and the clinical observer.

CHARACTERS, COMPOSITION, AND FATE OF THE CEREBRO-SPINAL FLUID.

May I, after this preface, proceed next to another chapter, which is also of a prefatory character, and give you as shortly as I can the present state of our knowledge regarding the characters, composition, and fate of the fluid. The fluid, as you know, is, under normal conditions, as clear as water and of low specific gravity; it contains in solution inorganic salts similar to those in the blood-plasma, a trace of coagulable protein, and a certain amount of a reducing substance which has now been definitely proved to be glucose; it is practically free from formed elements. Under various abnormal conditions the protein matter may be largely increased, or other substances than the usual ones may be added to it, such as cholesterol and choline (or a choline-like substance). It may further have added to it various kinds of cellular structures, the differentiation between which is a valuable aid in diagnosis, and in other cases parasites of different sorts may be found. The fluid is primarily formed by the secreting cells which are so prominently found covering the choroid plexuses in the cerebral ventricles, so that this structure may be appropriately designated, as Mott first suggested, the choroid gland. The fluid is normally present at a certain pressure, and this pressure is not the result of arterial pressure passively transmitted to the fluid. The cerebro-spinal pressure, it is true, may be affected by changes in the arterial and venous pressures, but it is not dependent on them; and it may, and often does, vary quite independently of these. The true cerebro-spinal pressure is the result of the secretory pressure of the choroid epithelium cells. In other words, the cranio-spinal contents cannot any longer be regarded as a fixed quantity without the power of expanding or contracting in volume.

No. 4862.

The rate of flow and the pressure of the fluid can be readily investigated in animals by placing a cannula in the subcerebellar cisterna and connecting it with the necessary apparatus. It is then found that there are three groups of substances which promote the flow and increase the pressure independently of those which affect it secondarily by altering the blood pressure. The first group consists of excess of carbon dioxide (or lack of oxygen) in the blood, as in asphyxia, and drugs which interfere with respiration. The second group is that of the volatile anaesthetics, which may act by interfering with the respiration or by altering the physical conditions of secretion. The third group is specific, and consists of an extract of the choroid gland, or of the brain. The former is the more powerful. The chemical nature of the hormone in this extract is uncertain, but it is probably some product of nervous metabolism, which, arising in the brain, passes to the choroid plexuses, accumulates there, and stimulates the secreting cells to activity; it cannot be discovered in the normal secretion, but in cases of general paralysis and brain softening—conditions in which catabolic processes are excessive—it can be recognised (by physiological tests) in the fluid itself. The choroid plexuses are abundantly provided with nerves, but there is no evidence that these are secretory in nature; indeed, the evidence derived from experiments with atropine and similar alkaloids points in the opposite direction. The hormone, whatever its nature, acts probably not on nerves, but on the secreting cells directly.

There is no doubt that this fluid is being continually formed, and the next question is, What becomes of it? Large quantities of a neutral fluid, such as physiological saline solution, disappear within a few minutes when introduced into the cranio-vertebral cavity, and the course taken by such fluids, and presumably also of the normal cerebro-spinal fluid, can be traced by adding some substance which can be easily recognised by its colour, or by chemical tests, or by its physiological action. Using such methods it has been demonstrated that the exit is by the blood stream, and not by the lymph channels of the nerves, which was formerly thought to be the case by a number of French observers.

If such substances are readily diffusible the speed with which they appear in the blood is very remarkable, especially if they are introduced into the subcerebellar region. An injection, for instance, of adrenaline, nicotine, or atropine produces typical physiological actions within a few seconds, in fact, almost as rapidly as if the injection had been made into the venous circulation direct. On the other hand, substances which are not readily diffusible (such as commercial peptone) do not produce their characteristic effects when they are introduced into the cerebro-spinal fluid, so that one of the older theories that actual valved orifices exist leading into the large veins at the base of the brain must be abandoned.

The diffusion process is most rapid in the subcerebellar district, but is extremely slow in the spinal, especially the lower spinal region.¹ It probably occurs into the venous sinuses by the microscopic arachnoid villi described by Weed. There is also a possibility that in addition to this transference may occur through the thin walls of the blood-vessels within the central nervous system, for, as Mott has pointed out, contact of these vessels with the cerebro-spinal fluid is maintained throughout their extent by the perivascular spaces, which are continuous with the subarachnoid cavity. Diffusion in the opposite direction from blood to cerebro-spinal fluid does not occur except in an almost negligible degree in the case of a few drugs, such as alcohol and urethane.

But in addition to this there is another and minor communication between the fluid and the other parts of the body. Dixon and I found that dyes added to the fluid travel along the course of certain cranial nerves, and this is especially true for the olfactory nerve. This is not the case for the spinal nerves; no dye can be detected in their sheaths outside the spinal canal and no dye is discernible in the lymph of the thoracic duct. I have spoken of this cranial (olfactory) outlet as a minor one, but clinical experience has shown that it is not a negligible one. For this loophole affords an opportunity for the entry of infective

¹ This is tacitly accepted by those who produce spinal anaesthesia by the injection intrathecally of substances of the cocaine group, for they recognise the danger of absorption if the drug reaches the medullary region.

agents, as Flexner has shown in the causation of infective poliomyelitis.

Such, then, is a brief and I fear imperfect summary of the present state of our knowledge, and I propose now to pass to the main object of my address, which is to discuss the meaning and functions of the fluid we are dealing with.

MEANING AND FUNCTIONS OF THE CEREBRO-SPINAL FLUID.

In the first place it can hardly be doubted that the presence of fluid within and around the structures of the central nervous system fulfil certain mechanical functions of support and pressure. That, however, does not explain why ordinary lymph would not do just as well, as it does in the majority of other organs. The relationships, however, of the brain and cord within a closed cavity are peculiar, and it may be that ordinary lymph is here insufficient to maintain a more or less constant pressure. For the pressure of ordinary lymph is wholly dependent on blood pressure; here, in addition, we have an independent pressure—namely, the secretory pressure of the choroidal secreting cells—and it is therefore quite possible that this may come into play in maintaining, equalising, and adjusting those pressure relationships which are most advantageous for the well-being and function of the brain and cord. It is further quite possible that the ameliorative effects not infrequently noticed as a result of withdrawal of the cerebro-spinal fluid by lumbar puncture may be due to the relief of undue pressure. But such considerations offer no explanation of the peculiar composition of the fluid. Its characteristic chemical composition must have a deeper meaning.

It is very common to speak of the cerebro-spinal fluid as the lymph of the brain. Let us now examine this phase more fully, and see if it has any scientific accuracy.

The Cerebro-spinal Fluid regarded as the Lymph of the Brain.

In the first place we must be quite clear as to what lymph is and what it does. It is a fluid which exudes through the thin walls of the blood capillaries. Whether lymph formation depends solely on physical conditions (filtration and osmosis), or whether in addition we have as a factor a secretory activity of the vascular lining membrane is an interesting physiological problem, which need not concern us now. The leakage fluid resembles blood plasma in its composition, except that it is comparatively poor in protein material, the diffusion of which through membranes is so difficult. This lymph, when formed, acts as the intermediary or middleman between the blood and the tissue elements, conveying to the latter on the one hand the oxygen and nutritive substances they need; and on the other hand it is into the lymph primarily that the tissues pour the waste products of their activity, and thus these are started on their journey to the organs of excretion (lungs, kidneys, &c.). The very essence of a lymph is that it should be in free communication, except for an intervening membrane, with the blood stream, and that this membrane should be equally permeable to water and other substances in both directions. The arrangement of the perivascular and perineuronal spaces, filled as they are with cerebro-spinal fluid, certainly resembles that of a lymphatic system, and therefore it is not surprising that the idea has caught on that cerebro-spinal fluid plays in the central nervous system the rôle of lymph. The peripheral nerves have a true lymphatic system analogous to that found in other organs, but anatomists are far from unanimous on the question whether the central nervous system possesses real lymphatic channels apart from the system of intercommunicating spaces occupied by cerebro-spinal fluid. The mere difficulty of discovering true lymph-vessels does not indeed finally negative their existence, but until they are satisfactorily demonstrated we may provisionally assume that they are absent. If, then, cerebro-spinal fluid is the only fluid which actually comes into contact with the tissue elements of the brain and cord, it necessarily follows that it must play the part played by lymph in other districts of the body; it must be, for example, the intermediary medium which is traversed by the oxygen on its way from blood to the tissue elements; and oxygen, we know, is essential for the continuance of nervous life and energy. Furthermore, it must be the vehicle by which other nutriment reaches the cells and fibres of nervous tissue. The next point is, Have we any evidence that the products of nerve catabolism pass into the fluid from the tissue elements as they do into ordinary lymph? If it were only possible to analyse and

compare the composition of the fluid before it enters the perineuronal spaces, and after it leaves them, it would be possible to answer this question authoritatively, but in the absence of such proof one can only argue from probabilities. Seeing that the fluid is the only one available for the purpose, an affirmative answer seems inevitable, and this is supported by the fact that cerebro-spinal fluid is rich, at any rate, in one waste product—namely, carbon dioxide.

The expression "lymph of the brain" is therefore so far justifiable. But we have absolutely no proof that the cerebro-spinal fluid is in part an exudation from the blood, and it is in the origin of the fluid that the analogy between lymph and cerebro-spinal fluid breaks down. Whatever views we may hold as to whether a secretory factor comes into play in the production of ordinary lymph (and, at the best, such a factor can only be an insignificant one), we can have no hesitation in proclaiming that cerebro-spinal fluid is a true secretion arising in a definite glandular structure. Such a fluid must obviously be the best one for maintaining normal life in the nerve cells, and the whole lining membrane of the spaces in which it resides appears to coöperate with the choroid gland in maintaining its constancy of composition, and to militate against the escape into it of substances from the blood stream, such as drugs or poisons which would be foreign to the fluid or harmful to the delicate and sensitive structure which it bathes.

We have seen that the essential feature of a true lymph is the free interchange between it and the blood in both directions. This essential character is lacking in the cerebro-spinal fluid; in all probability the lining membrane of the cerebro-spinal spaces is permeable to substances passing from it into the blood, but it appears to be impermeable (except for oxygen) in the direction from the blood to the fluid. The nutritive materials the fluid contains appear to be formed in the choroid gland, and not to be merely exuded from the blood stream; otherwise one cannot explain why the protein it contains is not similar to that in the blood or in exudations (lymph) formed from the blood.

If, as Weed has suggested, cerebro-spinal fluid is partly formed as ordinary lymph is by exudation from the blood in the perivascular spaces, it is difficult to understand why readily diffusible drugs and poisons do not escape readily into the cerebro-spinal fluid as they do into ordinary lymph. The difficulty is quite intelligible when we regard the choroidal epithelium as a stalwart barrier of cells which keeps back these materials, and only allows its own normal secretion to escape. This useful work would be undermined and frustrated if the general lining were easily permeable to foreign substance.

Camus found that barium chloridé, which is a very active poison to the central nervous system, will kill a rabbit of 2 kgr. weight when 1/10 mgr. is introduced into the sub-arachnoid space, whereas the lethal dose is one thousand times greater when this salt is given subcutaneously. It is well known that anaphylaxis can be produced by smaller doses of proteins administered into the brain than when given elsewhere. The use of salvarsan in locomotor ataxy and similar post-syphilitic affections *via* the cerebro-spinal fluid has been abandoned, as it is fatal not only to the syphilitic organisms, but also to the patient. It is further known that salvarsan and its homologues are of little or no use in tabes and general paralysis when it is given by the ordinary channels, for in these later manifestations of syphilis the baneful spirochæte has got into a harbour of refuge (which we may speak of as extravascular) beyond the reach of the poison. The stalwart epithelial layer lets none escape, and does not realise how much both doctor and patient would rejoice if it could be made to understand that in this instance at least it did not form such an effective barrier.

May I add in way of parenthesis how very desirable it is that chemists and pharmacologists should apply themselves to the solving of this difficulty? The future treatment of tabes and allied conditions should aim at the discovery of some blander arsenic compound which could be introduced straight into the cerebro-spinal fluid and kill the syphilitic organism in its lair without at the same time slaying the host who harbours it.

Significance of the Simple Composition of the Normal Fluid.

Is not the very simplicity of the normal fluid suggestive? I remember when I was a student that normal or physiological saline solution was regarded as a physiological fail,

for surgeons continued to use sponges (usually dirty ones at that time) soaked in water during operations. What a change has now come over the spirit of their dream. They have realised that water, even clean water, is a protoplasmic poison, and that osmosis is a real force and not a negligible phenomenon. I remember at about the same date witnessing, and in a humble measure assisting Dr. Sydney Ringer in his epoch-marking work on the effects of saline mixtures on living structures. The attitude of the profession generally in those days was a tolerant one, just the sort of attitude adopted by a grandfather indulgently watching his descendants playing with their toys. But who has not heard of Ringer's solution to-day? Who can write a paper on almost any physiological or pathological subject without mentioning it or alluding to the part it has played in his investigations?

Ringer's fluid is the ideal physiological salt solution; its saline constituents are present in the same proportion as they occur in the natural body fluids, and in that way the normal osmotic pressure is maintained when living structures are bathed in it. Ringer's original solution resembled frog's blood in its saline composition, but since then several modifications have been introduced. The most important of these is the one we owe to Locke, who has altered the proportion of the various salts (increasing, for example, the amount of sodium chloride from 0.6 to 0.9 per cent.), so that the fluid may be employed with success on the living tissues of the mammal. Locke has also added a small proportion of the sugar glucose, and when in use it is kept saturated with oxygen. It is well known that in such a fluid living structures can be preserved in a living condition for hours or even days and weeks. Locke's most striking results have been obtained with the mammalian heart; this can be kept beating for prolonged periods after its complete isolation from the body if it is perfused with the oxygenated fluid. The salts supply the normal stimulus to the cardiac fibres and maintain their physical integrity; the sugar acts as a source of energy and is consumed as activity continues.

Ringer's fluid, so compounded in the laboratory, is somewhat more than 30 years old. But in reality it is as old as the hills, or rather as man himself. Just as the Venus of Milo existed potentially from past ages in the block of marble from which it was ultimately hewn, so does Ringer's fluid exist in the blood and lymph, although its simple composition is obscured there by admixture with the blood proteins and corpuscles.

Here may I introduce another parenthesis and allude to another physiological puzzle, and that is the significance of the large amount of protein in the blood-plasma and lymph. The meaning and use of the blood corpuscles we understand, or at least we think we do, but the meaning of so large a quantity of protein in the blood fluid and the part it plays in nutrition is still hidden from us. The amount of protein necessary for the repair of the tissues is not great, and the modern doctrine of maintenance and growth is that the tissues help themselves, not from proteins directly, but from the various amino-acids which are the result of protein cleavage. The great protein store may be another instance of the prodigality of Nature in providing a large margin for conditions of weakness and stress. However this may be, the presence of protein is not necessary, or it may even be harmful when it is added to Ringer's or Locke's solutions in experiments with prepared organs.

But to resume the thread of our argument. Thanks to Ringer, some 30 years ago physiologists were provided with a suitable fluid for experimental work, but the choroidal epithelium knew the secret of extracting it from the blood for untold ages before Ringer was born. For what, after all, is cerebro-spinal fluid but Locke's modification of Ringer's fluid?

The view I have been led to take is—the nervous mechanism being so sensitive, so easily influenced by anything unusual—that therefore the neurons must be bathed in an ideal physiological saline solution to maintain their osmotic equilibrium; the trace of protein it contains is probably quite sufficient for nutritive processes, and is no doubt the kind of protein particularly suited to repair the small amount of wear and tear which is the result of nervous action. The sugar, just as in Locke's solution, would serve for a supply of energy. The choroidal epithelium, in its wise choice of a suitable circumambient medium for the neurons, is really exercising a protective function. In order to keep out harmful proteins (toxins and the like), the

comparatively harmless ones are kept back also, almost completely; all share the same process of exclusion. This protective action applies in addition to the majority of soluble drugs; this, as we have seen, may operate so as to be detrimental in diseased conditions. But we can hardly expect discrimination on the part of the epithelial secreting cells. The non-access of metallic and other poisons to the nervous elements is such a *sine quâ non* for their health, that during those periods when such substances are given for the relief of disease, or the slaughtering of parasites, the choroidal cells are unable to change their habits and so they prevent the drugs from getting through.

Such, I believe, then, is the real significance of the simple composition of this remarkable secretion. But before I sit down I must allude, in conclusion, to some other possible additional functions which the fluid may exercise.

Other Possible Functions of the Fluid.

The late Dr. Gaskell approached the question from the embryological and developmental point of view; he held that the neural tube represents an ancestral digestive canal, and those who adopt Gaskell's hypothesis might conceivably argue that the cerebro-spinal fluid is the representative of a primitive digestive juice, and is secreted by an organ which was formerly a digestive gland. However interesting such speculations may be, one can hardly suppose that anyone could seriously urge that the cerebro-spinal fluid retains any such functions to-day.

Dendy is one of many comparative anatomists who have not accepted Gaskell's views, and he has suggested that the important function fulfilled by the choroid plexuses is that of an intracerebral gill, and is concerned in respiration. The structure of the plexuses is certainly gill-like, but it is always unwise to argue from mere anatomical resemblances. Mott, who analysed the gases of cerebro-spinal fluid, found the quantity of carbon dioxide there very high (about 60 per cent.), and there is, therefore, something to be said in favour of the respiration hypothesis. It is quite possible that the choroidal epithelium may allow the escape of, or even actively excrete, this catabolic product, and it is unnecessary to point out how severe a poison any undue accumulation of carbon dioxide is in the central nervous system. Coupled with this fact is another I have previously mentioned—namely, that carbon dioxide is one of the most potent means of promoting a flow of the fluid. Just as urea is the best diuretic and bile the best cholagogue, so carbon dioxide is one of the most powerful cerebral lymphagogues.

One further point and I have done. The ependyma is lined by ciliated epithelium. Some doubt exists, I believe, as to whether the cilia are functionally active. But if we admit they are, the question arises, In which direction do they act? This is a question which is hardly susceptible of actual observation in man or the higher animals, but in the Amnocoetes which Professor Dendy has so largely used in his investigation he has brought forward evidence which shows that the movement is in a forward direction. I know it is not always wise to draw conclusions from such lowly animals, and apply them without reserve to the higher ones. There are certain cases where such deductions are quite impossible; for instance, in some of the humble fishes the central canal of the spinal cord does not terminate blindly at its posterior extremity, but opens out by an orifice into the surrounding tissues. In this case one can only speculate, and the rapidity of absorption of the fluid in the forward regions in comparison with that in the spinal district appears to favour Dendy's surmise, and the cilia, if they are active, would no doubt further the flow of fluid from the cord region to the large veins at the base of the brain, where it so readily leaves the subarachnoid space by entering the venous blood stream.

CONCLUSION.

There are doubtless other problems in connexion with the cerebro-spinal fluid that demand solution, but my task for this evening is over. My main object has been to present the thesis in which I feel there is, at any rate, some truth—namely, to regard the cerebro-spinal fluid as the perfect physiological medium, more perfect doubtless than the artificial fluids we can make in the laboratory, but in its essential features closely resembling those associated with the names of Ringer and Locke.

I think already I have said finally, or in conclusion, more than once, but will you pardon me if, like the proverbial

writer of sermons, I say it a third time, and this is really my concluding message. These are days of specialisation, but however necessary specialisation in medical science may be it has its attendant evils. Particularly regrettable is the divorce between those who pursue their investigations by the bedside and those who work in the laboratory. Neurology specially is a branch of our science in which an attempt should be made to bring about a closer *rapprochement* between the two sets of workers. Speaking personally, I have derived inestimable benefit from meeting with and hearing here the clinical side of the subject. Those responsible for the management of this section of the Royal Society of Medicine have realised this, and in having elected this year a President who is a laboratory person they have shown that they see the value of the *entente* I have alluded to; and I can only trust that my year of office may not be detrimental to those who form the larger contingent in the Neurological Section—namely, those who pursue more specially the study of disease by the bedside.

FURTHER CASES OF KALA-AZAR IN EUROPEANS SUCCESSFULLY TREATED BY INTRAVENOUS INJECTIONS OF TARTAR EMETIC.

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IN February last I reported, in conjunction with Captain N. H. Hume, I.M.S.,¹ six cases of kala-azar in Europeans treated with tartar emetic intravenously at my suggestion, with recovery in five, and death from complicating phthisis, after the parasites of kala-azar had disappeared from the spleen, in the sixth; and we concluded that the treatment is specific against this very serious disease. We have now been fortunate enough to be able to treat 18 consecutive cases during the last 14 months, with results which fully confirm the very sanguine expectations we formed from the smaller series of cases, while latterly we have been able considerably to shorten the time required for bringing about the cure of the disease by increasing the doses more rapidly than we ventured to do at first. Captain Hume has very generously placed his records at my disposal for the purposes of the

present paper, and I am greatly indebted to him for so thoroughly and successfully testing my method of treating kala-azar with tartar emetic intravenously, which, as already recorded,² I first commenced to use early in 1915, quite independently of the Italian work on the African form of the disease.

In order to enable the salient points readily to be grasped and to shorten the detailed description of the cases, the principal data regarding each have been embodied in the accompanying table, which also includes the first series of cases.

Brief Notes of 12 Further Cases.

The following data are given in the table. The duration of the disease before admission; the number of days in hospital; the duration of fever after the commencement of the intravenous injections of tartar emetic and the number of centigrammes of tartar emetic injected up to the final cessation of fever; and the maximum dose of the 2 per cent. solution given and total number of centigrammes of tartar emetic while in hospital. The table shows the condition before and after the treatment as regards the size of the spleen; the weight of the patient at first and the gain or loss under treatment; the red and white corpuscles, the ratio between them before and after the injections; and the presence or absence of the parasite of kala-azar, which enable the progress obtained to be seen at a glance. The most striking features regarding the individual cases are as follows.

CASE 7.—Female, aged 32, admitted for kala-azar of eight months' duration in a very emaciated state, weighing only 83 lb. 8 oz. (5 st. 13½ lb.), while her white corpuscles numbered only 875 per c.mm. Her arm became much inflamed after an early injection of tartar emetic owing to some of the solution escaping round the vein, so antimony ointment injections were substituted for the intravenous injections. After three and a half months in hospital the spleen was smaller, but the intermittent fever continued, while oedema of the face and feet was present, with albumin in the urine, and the liver was much enlarged, her condition being very unsatisfactory. The intravenous tartar emetic injections were now resumed and the dose gradually pushed up to 10 c.c. of the 2 per cent. solution, which was the strength used in all the present series of cases. After 180 centigrammes had been given in the course of 46 days the temperature finally remained normal, weight was rapidly regained, the parasites disappeared from the spleen, the blood greatly improved, and she recovered her strength and went home to look after her children. She was seen again a few weeks later, when her weight was

DATA BEFORE AND AFTER TREATMENT.

| Number. | Age. | Duration before admission in months. | Time in hospital. | Duration of fever. | Tartar emetic to cessation of fever. | Total tartar emetic. | Maximum dose of 2 per cent. solution. | Enlargement of spleen below ribs. | Weight on admission: Gain or loss. | Red corpuscles. | White corpuscles. | Ratio of white to red. | Parasites. | Result. |
|---------|------|--------------------------------------|-------------------|--------------------|--------------------------------------|----------------------|---------------------------------------|-----------------------------------|------------------------------------|------------------------|-------------------|------------------------|------------|-----------------------------|
| | | | Days | Days | cgm. | cgm. | c.c. | | lb. oz. | | | | | |
| 1 | 18 | 1½ | 226 | 64 | 140 | 149 | 9 | To navel. Just felt. | 89 10 + 16 4 | 3,660,000 5,050,000 | 2,000 8,500 | 1-1830 1-676 | + | Cured. |
| 2 | 28 | 5 | 64 | 45 | 96 | 124 | 8 | To navel. 2 in. | 109 8 + 17 12 | 2,990,000 ... | 1,375 ... | 1-2170 ... | + | " |
| 3 | 23 | 6 | 372 | ... | 51 | 56 | 4 | 3½ in. 1 in. | 91 0 - 3 0 | 2,960,000 3,220,000 | 1,125 1,125 | 1-2631 1-2862 | + | Died of pulmonary phthisis. |
| 4 | 36 | 12 | 214 | 35 | 78 | 326 | 10 | To navel. 1 in. | 96 10 + 22 4 | 3,850,000 5,160,000 | 1,125 10,250 | 1-3422 1-503 | + | Cured. |
| 5 | 38 | 9 | 195 | 59 | 73 | 307 | 10 | Navel + 1 in. Just felt. | 101 14 + 7 12 | 5,120,000 3,430,000 | 2,000 1,000 | 1-578 1-3430 | + | " |
| 6 | 28 | 4 | 229 | 145 | 332 | 580 | 11 | 8 in. 2 in. | 108 0 + 15 12 | 3,430,000 3,500,000 | 1,000 6,500 | 1-3430 1-538 | + | " |
| 7 | 32 | 8 | 179 | 56 | 180 | 250 | 10 | 2½ in. ... | 83 8 + 31 0 | 1,740,000 3,500,000 | 875 6,250 | 1-1989 1-560 | + | " |
| 8 | 13 | 4 | 188 | 83 | 124 | 314 | 8 | To navel. Just felt. | 48 10 + 24 2 | 3,420,000 5,050,000 | 500 5,250 | 1-6840 1-918 | + | " |
| 9 | 38 | 18 | 73 | ... | ... | 243 | 10 | Navel + ½ in. Smaller. | 132 4 - 1 4 | 4,240,000 4,150,000 | 3,125 5,000 | 1-1337 1-880 | + | Improved. |
| 10 | 13 | 3 | 161 | 123 | 223 | 243 | 10 | 4 in. 2 in. | 63 4 + 14 12 | 4,090,000 5,010,000 | 2,375 4,250 | 1-1722 1-1178 | + | Cured. |
| 11 | 17 | 3 | 114 | 51 | 66 | 254 | 10 | Navel + ½ in. ½ in. | 103 2 + 4 6 | 5,010,000 4,480,000 | 4,250 5,500 | 1-1178 1-600 | + | " |
| 12 | 47 | 3 | 97 | 23 | 90 | 332 | 10 | 1½ in. Not felt. | 106 4 + 24 0 | 3,620,000 4,380,000 | 1,125 6,000 | 1-3218 1-726 | + | " |
| 13 | 20 | 1 | 144 | 42 | 75 | 362 | 10 | 4 in. Not felt. | 76 8 + 18 0 | 3,620,000 4,690,000 | 1,125 9,250 | 1-3218 1-507 | + | " |
| 14 | 48 | 3 | 36 | 35 | 188 | ... | 10 | 1½ in. ... | ... | 3,940,000 5,040,000 | 1,500 2,000 | 1-2627 1-2520 | + | Greatly improved |
| 15 | 45 | 6 | 35 | ... | ... | 68 | 5 | 3 in. 2 in. | 91 0 + 6 0 | 2,540,000 ... | 750 ... | 1-3387 ... | + | Improved. |
| 16 | 17 | 3 | 85 | 20 | 206 | 434 | 10 | 3½ in. Not felt. | 83 0 + 7 0 | 3,500,000 5,210,000 | 2,125 10,250 | 1-1647 1-508 | + | Cured. |
| 17 | 36 | 9 | ... | 13 | 42 | ... | 10 | 6 in. Not felt. | 100 8 ... | 3,020,000 5,570,000 | 1,375 4,000 | 1-2197 1-1392 | + | " |
| 18 | 30 | 4 | ... | 35 | 86 | ... | 10 | 2 in. ... | ... | 3,830,000 ... | 3,750 ... | 1-2197 ... | + | Greatly improved. |

found to have increased by 31 lb., or more than one-third of her original weight. This is one of the most remarkable recoveries I have ever seen in a very long experience.

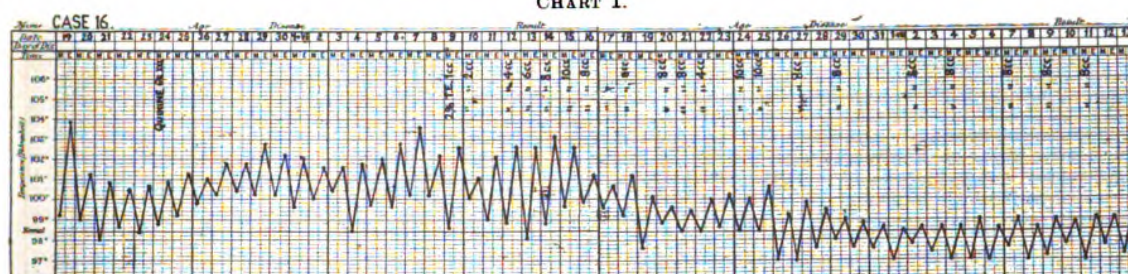
CASE 8.—Male, aged 13. He had suffered from fever for four months and weighed only 48 lb. 10 oz., being very emaciated. Spleen down to the navel and leucocytes only 500 per c.mm. He was treated with antimony inunctions for a month without much effect. Tartar emetic injections were then commenced and gradually pushed up to 7 and 8 c.c., but as vomiting resulted it was reduced to 4 c.c. after the temperature had fallen to normal. After 13 doses containing a total of 124 cgm. had been given in the course of 83 days the fever finally ceased. On discharge from hospital two months later he had gained 24 lb. 2 oz., an increase of almost exactly 50 per cent. on the original weight. The spleen could only just be felt, the blood was normal, the leucocytes having increased more than ten-fold, and the parasites had disappeared from his spleen. Such data speak for themselves.

CASE 9.—Male, aged 38, who had suffered from fever for 18 months. He remained in hospital for 73 days and received a total of 243 cgm. of tartar emetic intravenously.

CASE 14.—Male, aged 48. Admitted in a very weak condition with kala-azar for three months. He had remittent fever, which for two weeks ranged from 102° to 104° and 105°, but fell to normal and a low intermittent type when the doses of tartar emetic had been pushed up to 8 c.c. The treatment was interrupted by an abscess at the elbow, and he now had some fainting fits and on one occasion loss of consciousness for a minute. After he had received 188 cgm. in 35 days the fever finally ceased. He has now been free from fever for eight weeks and is gaining weight steadily and has every prospect of completely recovering from a very grave condition. He was too ill to be weighed until recently.

CASE 15.—Male, aged 45. Admitted for kala-azar of six months' duration. He was exceedingly nervous over the injections, and after receiving 63 cgm. in 16 days, the maximum dose being 5 c.c., he felt unable to go on with the treatment and left hospital. He had improved distinctly, having gained 6 lb. in weight, but still had slight fever, so it is doubtful if the improvement will be maintained in the absence of continued treatment. We have not been able to obtain news of him since he left hospital.

CHART 1.



When the dose reached 10 c.c. he suffered from sickness and lost the little weight he had gained, and he left hospital against advice while still suffering from an occasional rise of the evening temperature to 99.4° F., although his blood had improved and his spleen was smaller. We have not been able to obtain news of his subsequent progress.

CASE 10.—Male, aged 13, who had suffered from fever and spleen for three months. Small doses of tartar emetic were given during the first two months without much improvement. They were then pushed up to 10 c.c., a very large dose for a boy weighing only 63 lb., but except for cough immediately after the injection no toxic symptoms appeared. When he had received a total of 223 cgm. in the course of 123 days his fever finally ceased and he gained weight steadily, putting on 14 lb. 12 oz. before he left hospital, while the parasites had disappeared from his spleen, which was much smaller, and he had become well nourished. He has been recently discharged cured.

CASE 11.—Male, aged 17, who had suffered from fever and spleen for three months. Soon after the tartar emetic treatment was begun he had an attack of pneumonia, which interrupted the treatment for a month. When he had received 66 cgm. in 51 days the fever finally ceased and he began to gain weight, but he left hospital three weeks later very much improved. He reported himself some time later, and had suffered from no more fever, had gained weight considerably, and was quite well.

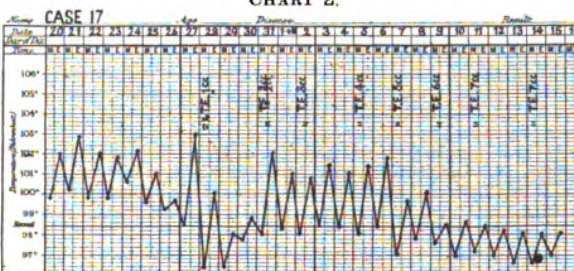
CASE 12.—Male, aged 47, who had suffered from spleen and fever for three months. In this case no parasites were found on spleen puncture (the only one of the 18 cases not so verified), but he had only 1125 white corpuscles, or a ratio of 1 to 3218, which I have previously shown to be characteristic of kala-azar,³ as was his clinical condition. In this case the amount of tartar emetic was rapidly pushed up by increasing the dose by 2 c.c. every other day until 10 c.c. was reached. The result was most satisfactory, as when a total of 90 cgm. had been given in the course of 23 days the fever finally ceased and he put on weight with great rapidity, actually gaining 24 lb. in 37 days, and he returned to work fat and well three months after his admission. He has been seen recently, nearly two months after his discharge, and has had no return of fever, has gained another 6½ lb. in weight, his blood is normal, and he is quite well.

CASE 13.—Male, aged 20, with a history of fever for one month. He received 75 cgm. of tartar emetic intravenously in 42 days, when his fever finally ceased. The injections were continued for another two months, by which time a total of 362 cgm. had been given. He had now gained 18 lb. in weight, the leucocytes had increased from 1125 to 9250, and his spleen could only just be felt, although it had extended 4 inches below the costal margin on his admission. The parasites had also disappeared from his spleen, and he has recently been discharged cured.

CASE 16.—Female, aged 17, who had suffered from kala-azar for three months. In this case the doses were also rapidly increased by 2 c.c. up to 10 c.c. and given daily at first, but as the 10 c.c. doses caused much sickness it was reduced again to 8 c.c. The rapid fall of the temperature which resulted is illustrated by Chart 1 and it became normal 20 days after the tartar emetic was commenced, when a total of 206 cgm. had been given and she began to put on weight. The red corpuscles have now reached normal, while the leucocytes have risen from 2125 to 10,250, and the spleen, which extended 3½ inches below the ribs on admission, is no longer to be felt. As she has now been quite free from fever for two months there is every prospect of her permanent recovery in a shorter time than in any of the cases described above. She has just been discharged from hospital.

CASE 17.—Male, aged 36, who had suffered from fever and enlarged spleen due to kala-azar for nine months and was in a bad condition on admission. This patient also responded in a remarkable way to rapidly increasing doses every second and third day as shown in Chart 2. After 42 cgm. had been given in 13 days the temperature remained normal, except for a temporary rise due to inflammation of his arm from an escape of a little tartar emetic around a vein. He

CHART 2.



has put on 23½ lb. in four weeks, and his spleen has decreased from 6 inches below the ribs until it is only just felt. This is the most rapid improvement we have yet seen, and, taken with Cases 12 and 16, indicates that by the more frequent injection of rapidly increasing doses to the point of tolerance kala-azar patients are likely to be cured much more quickly than we previously thought to be possible.

CASE 18.—Male, aged 30. Admitted for kala-azar of four months' duration in an emaciated condition. After he had received 86 cgm. of tartar emetic in 36 days the fever ceased. He has recently had an attack of dysentery, which yielded to emetine, and he is beginning to pick up again, but he has

not been long enough under treatment to say more than that he is much improved, but is included to complete the series of cases treated up to date of writing.

Further Progress of the First Series of Cases.

The following is all the information we have been able to obtain of the progress of the first series of cases since they were reported in the former paper. No. 1 has been seen recently, just over a year after his discharge from hospital, and he remains in perfect health and full work. No. 2 was last seen six months after leaving hospital, when he was quite well and his spleen had receded beneath the costal margin, although 2 inches below it on his discharge from hospital. No. 3 died from phthisis as reported. Nos. 4 and 5 have not been heard of recently. No. 6 was still in hospital when we last reported; he was discharged cured four months ago, and has been seen recently in perfect health. Thus no case we have been able to follow up to from four to 12 months after discharge from hospital has relapsed.

Discussion of the Cases.

Technique of the injections.—There is little to add to what was said in the former paper¹ regarding giving the injections. It will be noted that the progress of several cases was retarded owing to an escape of some of the solution around the veins causing severe inflammation and abscess formation usually at the bend of the elbow. The only way to avoid this unfortunate complication is to distend the veins fully by a tight bandage or an elastic band stretched round the upper arm and one end passed in a loop under the other or the ends clipped together, so that it can be rapidly loosened by pulling out the loop or releasing the clip. The vein is then punctured through the skin with a fine sharp needle, taking care not to perforate the posterior wall, and a few drops of blood drawn into the syringe to make sure the needle is in the vein, the constriction round the arm released, and the solution slowly injected. If pain occurs or the smallest swelling appears round the vein stop the injection and suck out as much fluid as possible with the syringe. Collodion on cotton wool may be applied over the puncture. If the veins are difficult to distend by a bandage or rubber tubing the air bag of a blood-pressure instrument may be used for that purpose, the pressure being released before the injection is made. If any of the solution does escape around a vein severe pain occurs at once, which may require morphia for its relief, much induration takes place and sometimes suppuration.

Dosage.—The only alteration we have made in the doses is to increase them more quickly than in the first series of cases. In view of the very rapid improvement which followed this procedure in Cases 12, 16, and 17 we now recommend in adults to begin with 4 c.c. of the 2 per cent. solution of tartar emetic, to add 2 c.c. at the second injection, and, if no toxic symptoms occur, 1 c.c. from that point to 8 or 10 c.c., above which it is not necessary to go. If toxic symptoms arise, other than cough, immediately after the injection, the dose should be reduced until no sickness or nausea occurs, as body weight may be lost as a result of repeated sickness from too large doses. The earlier doses may be given every other day, but when the full dose which is well tolerated is found one injection every three days will suffice.

Toxic symptoms.—Sickness is the most important toxic sign, and its occurrence is an indication for reducing the dose. No serious symptoms have resulted from the large doses given in this series of cases, unless the fainting fits in Case 14 were predisposed to by the drug. Cough just after the injection is common but unimportant. In patients with dropsy or albumin in the urine the dose should be increased cautiously.

Duration of the treatment.—In all except the last five cases and those who left hospital at their own request the injections have been continued for from several weeks to two or three months after the fever had ceased, and only stopped, as a rule, when the body weight had much increased, the spleen become considerably reduced, the blood had approached or reached the normal as regards both the red and the white corpuscles, and the parasites had disappeared from the spleen. This precaution was adopted in view of the great chronicity of sporadic kala-azar, and it has been fully justified by the fact that none of the cases we have been able to follow up for from several months to a year after leaving hospital have relapsed, while most of the

patients are in full work. The question now arises as to how far we have gone on the safe side and whether the duration of the treatment may not be safely reduced. I have previously pointed out² that once a patient, who had become emaciated as a result of kala-azar, loses his fever for a long time and becomes well nourished, the disease does not recur. This experience is amply confirmed by that of over 20 years' experience of Mr. Dodds Price in Assam, who still has scores of coolies doing full work on tea-gardens years after their recovery from advanced kala-azar. An analysis of the present series of cases shows that in nearly all of them the fever finally ceased after from 5 to 12 doses of 5 c.c. and over of the 2 per cent. solution, and that this was first followed by rapid gain in weight and then by diminution in the size of the spleen and great improvement in the condition of the blood. The second spleen puncture, showing the absence of the parasites which had been found before the treatment was begun, was only done after great clinical improvement had taken place, so I am not in a position to say how soon they disappear after the treatment. With the more rapid increase of the dosage adopted latterly Case 16 left hospital apparently cured 65 days after the treatment was commenced, while Case 17 is in an equally satisfactory condition 50 days after the first injection, although he was admitted in an advanced stage of the disease after nine months' fever. In these two cases the injections were continued throughout these periods of time, although the fever ceased after 20 and 13 days respectively, and as the injections of tartar emetic in non-toxic doses appear to have an excellent tonic effect in kala-azar, we advise the adoption of the plan which has proved so eminently successful in these two cases, as can be seen by a glance at Charts 1 and 2, although further experience may show that an even shorter course may be equally efficient.

Effect of the treatment on the fever.—Column 5 of the table gives the number of days after the tartar emetic injections were commenced before the fever finally ceased, while column 6 shows the number of centigrammes of tartar emetic given within that period. In Case 6 the time was greatly prolonged by abscess formation at the elbows, while in Case 10 during the first two months only small doses, but once reaching 5 c.c., were given as he was a poorly developed boy of 13 years. When the dose was increased to from 6 to 10 c.c. the fever finally ceased in five weeks. In Case 8 small and infrequent doses were also given during the first seven weeks owing to his youth, and antimony inunctions were also used. When the doses of tartar emetic were increased to from 5 to 8 c.c. the fever ceased within a month. The same is true of No. 1, in whom the doses were very cautiously increased, but after he had received seven injections of from 5 to 9 c.c., the fever stopped for good. All the evidence then indicates the advisability of rapidly pushing up the doses to from 6 to 10 c.c., or the highest dose short of 10 c.c., which is well tolerated, when the fever may be expected to be controlled after from five to ten doses, given every third day, or within about a month.

Effect on the blood.—The condition of the blood on admission and again at the end of the treatment is shown in columns 11 to 13. A considerable degree of anæmia was present in nearly all the cases on admission, while on discharge the number of red corpuscles was nearly or quite normal in all but three, in one of whom (No. 7) they had increased from 1,740,000 to 3,500,000. Of still more interest and importance is the uniformly great increase of the white, the great reduction in which kala-azar has been shown by the writer³ to be of the utmost diagnostic and prognostic significance. On admission, in no less than 13 of the cases the white corpuscles only numbered from 500 to 2000 per c.mm., while in nearly every case on discharge they had risen to within the normal limits, and in two cases they exceeded 10,000. Such an increase, when not due to a temporary inflammatory condition, is one of the surest signs of the recovery from kala-azar. It does not appear to a marked degree until after the temperature has been normal for some time, so I regard it as a sign of the cessation of the struggle between the parasites and the phagocytes, owing to the former being destroyed by the tartar emetic, allowing the replacement of the lost leucocytes by the normal reparative powers of the system. No case in which the leucocytes have reached the normal has relapsed in our experience, so that a normal leucocyte count is likely to prove a reliable indication for stopping the injections of the

antimony salt. The increase of the ratio of the white corpuscles to the red from the very low figure of less than 1 to 1500, which is usually present in active kala-azar, to within the normal limits of from 1 in 500 to 1 in 1000 is also a very favourable sign.

The effect on the spleen.—The extent to which the spleen reached below the costal margin before and after the treatment is shown in column 9 of the table. Pain is occasionally felt in the spleen after the tartar emetic injections, but little change in the size of the organ appears, as a rule, until the temperature has been normal for some time. When the patients can be kept under observation for another two or three months the spleen becomes much reduced, so that instead of extending to about the navel it may nearly or even completely disappear beneath the costal margin, as in several of the cases in the table. In addition some of the patients have been seen some months after discharge from hospital with their spleens still enlarged, and at the later date it had disappeared beneath the ribs. In some, such as Nos. 16 and 17, it had receded beneath the ribs, so could not be conveniently punctured to ascertain if the parasites had disappeared. The rapid improvement, however, left no doubt in my mind on this point.

Effect on the parasites.—It will be observed that in the great majority of the patients the parasites were found to be absent from the spleen before the patients left hospital, although in all but No. 12 they had been found by spleen puncture before the tartar emetic treatment was commenced. The exceptions are Cases 11 and 15, who left hospital at their own request before a second spleen puncture had been made, and Case 16, whose spleen had risen to beneath the ribs, while the other cases are still under observation in hospital. This evidence completes the proof of the curative action of the drug.

Effect on the body weight.—The rapid gain in body weight by these emaciated subjects as soon as the fever ceases is perhaps the most remarkable and promising feature of the treatment, as shown by the figures in column 10 of the table. Thus Case 8 increased his original weight by almost exactly 50 per cent. in under four months, while Case 7 put on 31 lb. in 77 days, or 36 per cent. of her original weight. No. 12 put on 24 lb. in 37 days, while Case 17 has increased by 23½ lb. in 27 days. Bearing in mind what we have already said regarding the good prognostic significance of a great improvement in the nourishment of kala-azar patients, we regard this result of the tartar emetic treatment as one of the best proofs of its specific action in the disease.

Summary of the Results.

The following figures show briefly the results obtained in the 18 consecutive cases we have treated, which includes every case available in Captain Hume's wards during the 14 months we have used this treatment in the Calcutta European Hospital. Cases are entered as "cured" when the fever has completely ceased for two or more months, together with considerable gain in weight and a restoration of the blood, and especially of the white corpuscles, to the normal and decided diminution in the size of the spleen. This class includes 13 cases. In the two entered as "greatly improved" the temperature has been normal for several weeks, but the general condition has not yet shown that degree of improvement which we recognise as a safe sign of complete recovery. Both are still under treatment with very good prospects. Both the cases entered as "improved" left hospital at their own request before they had received adequate treatment, in one of whom full doses had not even been nearly reached, so that the method had not had a fair trial. One patient died from phthisis after the kala-azar parasite had disappeared from his spleen. The only case in which the treatment might be considered to have failed was No. 15, as the patient said he could not stand the intravenous injections, being a very nervous subject.

Table of Results.

| | | | |
|----------------------|----|-----|-------------------------------|
| Cured | 13 | ... | — |
| Greatly improved ... | 2 | ... | In hospital still. |
| Improved | 2 | ... | Left hospital prematurely. |
| Died | 1 | ... | Died from pulmonary phthisis. |
| Total | 18 | | |

When we remember the most reliable data we have regarding the mortality of kala-azar under careful and prolonged treatment—namely, the cases of my friend Mr. Dodds

Price on Assam Tea Estates, showing a mortality of 96 per cent. at the beginning of the outbreak in the Nowgong district and of 78 per cent. after the epidemic had died down in the district—the above results are so remarkable that it is difficult to find a parallel case in which such a deadly and lingering disease has been brought under complete control by a simple medicinal remedy. (In view of these results I would suggest that the use of tartar emetic appears to be worthy of further study in human trypanosomiasis and sleeping sickness in Africa.) Moreover, it has been shown by Mr. Dodds Price and the writer⁴ that kala-azar has been completely eradicated from the tea estates of the Nowgong district (all of which are now completely freed of the disease, although it had lingered in two of them for 20 years) by the writer's segregation measures, the efficiency of which was first established before even the parasite of the disease was known.⁴ Still further, the progress of the terrible epidemic, which carried off one-third of the inhabitants over some 200 miles of Assam south of the Brahmaputra river, has for long ceased; the segregation and other measures which I recommended in my report on kala-azar of 1897 having proved successful in dealing with the disease in the few villages which became infected in the Golaghat district to the east of Nowgong, as shown by Major T. C. McCombie Young, I.M.S., Sanitary Commissioner of Assam,¹ with good prospect of checking the further spread of the disease through important tea districts. This terrible disease, with its almost unequalled mortality and long-drawn-out sufferings, has thus been rendered amenable to a remarkable degree to both prophylactic and curative measures, largely as a result of the nearly continuous researches of the writer throughout the past 20 years.

Bibliography.—1. Brit. Med. Jour., Feb. 26th, 1916. 2. Ibid., July 31st, 1915, p. 197, and Indian Medical Gazette, October, 1915, p. 364. 3. Fevers in the Tropics, Milroy Lectures on Kala-azar. 4. Trans. Med. Chir. Soc., vol. lxxxii., 1898. 5. Indian Medical Gazette, 1914, p. 301.

DENTAL DISEASE IN NURSING WOMEN:

A NOTE ON THE ASSOCIATION BETWEEN ORAL SEPSIS AND DEFICIENT LACTATION.

By HAROLD WALLER, M.B., B.C. CANTAB.

THE far-reaching effects of sepsis occurring in connexion with the teeth have been so often described that it may be felt that anyone proposing to arouse fresh interest in this well-worn theme must have something entirely original to say before a hearing is deserved. While no claim to originality can be made for the contents of this article, yet it is felt there is still one aspect of the subject which has received less notice than its importance deserves. The particular effect of dental disease referred to is a general lowering of health—a result which in child-bearing women manifests itself by a failure in their power of lactation. It is at once evident that in this particular connexion the disease is capable of producing ill-effects of wider distribution than is usually included in the lists of its commonly accepted disadvantages.

To suggest that dental disease militates against successful breast-feeding is not to suggest that it is responsible for all instances in which the child fails to thrive on the breast milk. It is common for a failure of lactation to be produced in a woman, healthy in all respects, by neglect of the physiological requirements which govern the secretory tissue of the breast. The custom of sucking the infant at frequent intervals is intimately concerned with this type of failure, but it is the method and not the milk which should be blamed. Another source of error is the deduction that the milk is at fault from the restless behaviour of an over-clothed and under-ventilated child. Such mistakes are still responsible for the institution of a great deal of bottle-feeding, and must be corrected before it is possible to form any true opinion of the potential capacity of the lacteal glands. Even so, when the management of the baby and the feeding arrangements are arranged to fulfil the physiological demands of lactation as well as of infant digestion and bodily comfort, there remains a number of cases where the child fails to thrive. Dissatisfaction with the breast-feeds and vomiting are often early symptoms in the child of such a failure. The vomiting

is of an intractable type, variable from day to day, sometimes interrupting the feed, sometimes following shortly after its conclusion; at others interfering with sleep and accompanied by attacks of screaming which may last for hours. The vomiting has a tendency to be frequent, copious and forcible, and the woman rightly concludes that her milk disagrees with the child. The mother of such an infant may present a frail, unhealthy appearance, and it is not uncommon to find that the child is under-sized and that, notwithstanding the correspondence with calculated dates, the birth is thought to have occurred prematurely. In marked cases of the type under discussion there may be observed in the child a persistent blueness of the extremities, quite foreign to one whose diet and digestion are in accord. Where a record of the gain in weight is kept it will be found to proceed at an unsatisfactory rate. It may be that a child several weeks old is no heavier than at birth; or, even when allowance has been made for the reading of the midwife's scales, and they must surely be as elastic as those of fishermen, that there has been a loss of flesh. The association of so many unsatisfactory symptoms can hardly fail to attract attention. But in other instances there is nothing very striking in the woman's appearance to suggest that she is not healthy, though her infant's progress is far from satisfactory.

I have learnt to attach importance in such cases to the presence of oral sepsis in the mother, and it is well to remember that leading questions about the condition of the teeth seldom afford enlightenment. But it will be found that if inquiry is directed to the metastatic effects of oral sepsis positive evidence is given unsuspectingly. Thus, it is common to be told that the woman is rheumatic and is subject to recurrent sore-throat, that she "suffers with her head," or that she constantly wakes in the morning with a bad taste in the mouth. Attacks of neuralgia, stiff neck, swollen face, or "gumboils" are sometimes admitted. Indigestion, vomiting, loss of appetite, and a decline in weight and strength are symptoms often volunteered. Examination of the mouth suggests most strongly the probable etiology of many of these complaints. From a superficial inspection it is often obvious that good general health is incompatible with the conditions found there. Caries of long standing, dead teeth, broken roots regarded as harmless and often covered by plates, the openings of sinuses from which pus can be expressed in quantity, loose teeth with a copious discharge arising from their alveolar insertions—all these are of common occurrence. A chronically infected state of the tonsils must necessarily be added to the list. It is unfortunately common to hear that such patients have for years relied on medicinal remedies for their debility and anemia.

Presenting greater difficulty, but often of equal importance, are the cases where elaborate architectural devices have been built up, and where the mouth contains a number of gold-crowned teeth; for despite their cleanly appearance they do not always, in point of fact, rest on sound foundations. The very form of their construction sometimes serves to imprison disease which has progressed beneath. So also may the costliness of their erection prove a serious hindrance to their alteration or removal. In such cases the knowledge of an expert and impartial dentist may have to be supplemented by skiagrams before the point can be settled.

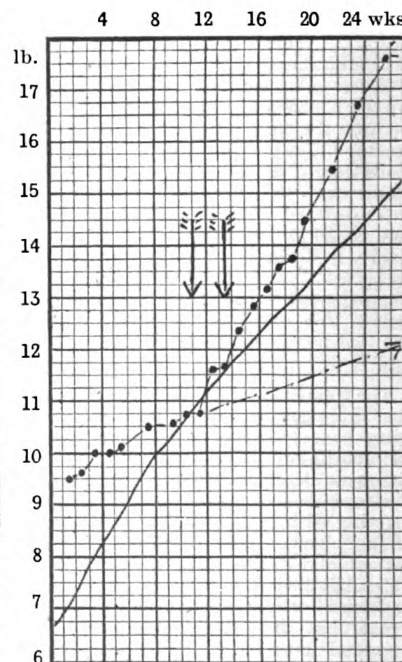
There would be little object in thus referring to the familiar aspects of a well-known and prevalent disease were it not comparatively easy to show that its ill-effects in nursing women are not confined to the mothers themselves, but are of considerable importance to their children. The real importance of the question lies in the chance which treatment offers of effecting a sufficiently rapid improvement in a woman's health to raise her powers of lactation from a subnormal to a satisfactory level, and so of avoiding the need to rear her child by hand with all the difficulties, dangers, and expense which this process entails. If a change of such unquestioned benefit can be conferred by the removal of dental disease, a tenacious attachment to infected teeth can no longer be regarded simply as a matter of individual preference, to be respected on grounds of personal liberty. The prevalence of the condition must, on the other hand, be recognised as a very disastrous one, claiming attention on national grounds of the first importance in view of the interference it produces with the course of infant welfare. If the sceptic is inclined to think that too much is being made

of a trivial subject, let him notice how infrequent are digestive disturbances and intestinal disorders in breast-fed infants whose mothers are the possessors of perfect teeth.

My own experience has led me to believe that if the removal of dental disease is adequately carried out, even after it has produced symptoms such as have already been mentioned, improvement in the woman's health is sufficiently rapid and substantial to be of signal benefit to her child. But for purposes of evidence a more reliable objective standard is required, and the child's rate of gain in weight provides the most trustworthy guide. Two changes should follow treatment if its effect on a woman's general health is sufficient to influence lactation: (1) the rate of gain in the child's weight should be accelerated, and (2) the length of time over which nursing can be carried out should be prolonged.¹ The demonstration of these two results, either separately or in conjunction with one another, is necessary to substantiate the claim to importance which has been made. They will be reinforced if accompanied by other symptoms in the child of a more satisfactory diet, such, for example, as the cessation of vomiting and willingness to sleep for long intervals between the meals. The mother should also become aware of an increase in the flow of milk. Three cases exemplifying these features will be described.

CASE 1.—The second child of a woman, aged 21, was brought to an infants' consultation at the age of two weeks. The child was above the average in weight and looked healthy. The mother was of frail appearance with a sallow complexion, and in manner anxious and overwrought. She complained of loss of appetite, pains in the head, and inability to sleep. Her first child had been breast-fed for 10 months with success. The second was also being suckled, but cried unduly and vomited the milk from time to time. An unhealthy condition was present in the woman's mouth; above the broken stump of an upper incisor was the opening of a sinus from which pus escaped freely on pressure. The scars of other openings were visible

CHART 1.



Case 1.—Weight curve of child. The continuous line is Budin's curve. The interrupted line gives the record of the child's weight. The arrows denote the extraction of maternal teeth: three in the first case, two in the second. The direction of the interrupted line before the extraction would lead to a weight of 14 lb. at one year, after the extraction to one of 22 lb.

above the position of a tooth which had been broken and over which the gum had united. The removal of the defective teeth was urged, but arrangements for this could not be made for several weeks. Meanwhile the child's gain in weight became unsatisfactory. Reference to Chart 1 will show that by the end of the twelfth week he had lost the initial advantage which he held over the average child at birth. The mother's health was visibly deteriorating, and with lack of sleep and the

¹ In Budin's curve we have a standard which may conveniently be used for the first point in providing an average rate of progress in a child's weight during the first year of life. The normal period of lactation is not easy to fix; as Forsyth has shown, it depends to a large extent on tradition. In one of the cases quoted later it will be noticed that the orthodox period of eight months is exceeded. All this means is that the child was spared for longer the necessity of drinking cow's milk—a fact that can scarcely be stigmatised as "unnatural."

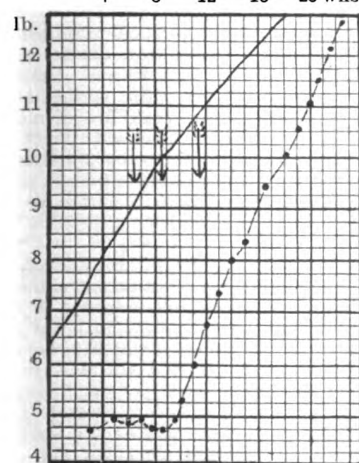
continued fretfulness of her infant she had become depressed and careworn. The prospects of successful breast-feeding had begun to appear altogether unfavourable, and the child to show a definite aversion to the breast milk, when she attended for dental treatment at the London Hospital. Three teeth were extracted when the child was 11 weeks old and two a fortnight later, the mouth healing quickly. Improvement in the health of both mother and child followed at once and the weight curve is seen to rise. Test meals were taken on several different occasions. Before removal of the teeth the child was found to gain 4 oz. in weight in the course of each of three meals. At weekly intervals from the fifteenth week the weights registered at the feeds were 8, 7½, 7½, 8, 6½, 8½ oz., and at the twenty-sixth week 10 oz., by which time the weight was 2½ lb. above the average calculated by Budin's curve. The infant's progress was almost uninterrupted up to the age of a year. Breast-feeding was discontinued during an attack of varicella at the eleventh month, and half-a-pint of cow's milk given instead, with a diet of mixed food.

It is interesting, and perhaps not unduly fanciful, to speculate on the alternatives to this course. To start with, her own teeth were almost the only thing the woman had not thought of blaming for her baby's misdemeanours, so that she would not instinctively have sought the right treatment, in which case it is scarcely conceivable that by means of breast-feeding she would have succeeded in keeping the child in health. Had the baby continued to gain in weight at about the same rate as that recorded during the first three months the curve would have reached at 12 months a height approximately of 14 lb. The actual weight at that age was 22 lb., representing a gain of 8 lb., or more than a third of the total body weight. Much more probably bottle-feeding would have been installed about the fourth month, a plan associated with much risk in this particular household, but inevitable, if the powers of lactation continued to decline. The mother's health, meanwhile, would have been left to fare as best it could.

Failure of lactation in this kind of case is often attributed to the woman's lack of food, and doubtless there are instances in which it is true; but the appearance which gives rise to the diagnosis of starvation is, in reality, more commonly produced by toxæmia, followed by failure to assimilate food and loss of flesh. To increase the food-supply alone is of little or no use. Removal of the cause of ill-health will often show, on the other hand, as in the above instance, that the available food-supply was adequate in the absence of sepsis.

CASE 2.—The first-born child of a woman aged 29, whose health was poor during the first three months of pregnancy,

CHART 2.
4 8 12 16 20 wks.



Case 2.—Weight curve of child. Lines as before. The arrows indicate the extraction of eight teeth, twelve teeth and four roots, and eight teeth respectively.

escaping from the breasts between the feeds. The child vomited frequently, sometimes when feeding, and sometimes at the end of the meal. On other occasions the milk would be retained for an hour or more and then be forcibly rejected.

Intervals of three and four days elapsed between the action of the bowels. Alterations in the hours of feeding were made until treatment could be arranged in the dental department, but they produced no improvement. The dentist reported that nothing less than radical extraction of every tooth could hope to affect the grave sepsis which was present. The gums were swollen and in some places almost covered the crowns of the teeth, many of which were loose, with pus oozing round them. Caries had long since wrought havoc throughout the mouth and a number of sinuses existed. The patient agreed to the proposal and the dates of the extractions are entered on Chart 2. The child's vomiting ceased almost at once, a daily movement of the bowels was established, and a steady gain in weight followed. Despite her edentulous condition, which made eating difficult, a marked improvement in the mother's health also took place. It is interesting to note that the child did not gain weight until the majority of the teeth had been extracted. Within a few weeks the child's skin improved in colour and the extremities lost their abnormal purple tint. The weight, which had been almost stationary at 5 lb. from the third to the tenth week, rose to 10 lb. between the tenth and eighteenth week.

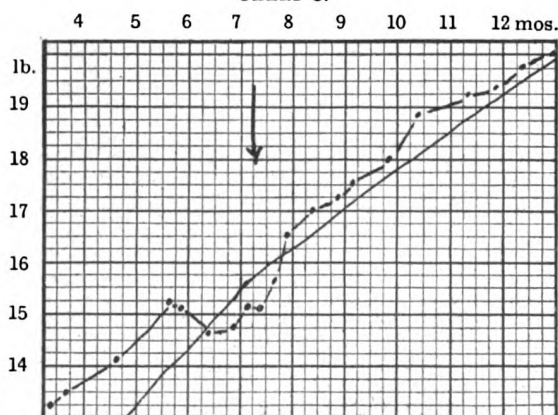
In this instance it is significant that the milk was not deficient in quantity before the teeth were removed. But the child's vomiting was not caused by taking excessive amounts, for the plan was tried of allowing short feeds of a few minutes only. The milk was still vomited. Moreover, extraction of the teeth could not be expected to lessen the flow, yet vomiting ceased with the diminution in the sepsis. The presence of organisms in the milk was suspected, but cultural examination disproved this. It must be presumed that the milk was rejected on account of some toxic properties, and the details given will serve to emphasise how closely the infant's behaviour resembles that seen in cases of obstruction due to spasmodic closure of the pylorus. The apparent paradox of a child starving itself to death in the presence of a copious supply of its mother's milk is rendered clear if it can be proved that the food contains some virulently toxic substance. Oral sepsis in the mother is not, so far as I am aware, at all frequently suspected as the underlying cause of such misdemeanours in the baby. There is a passage in Still's writing² which seems to apply very accurately to the kind of case under discussion: "Sometimes where the infant was wasting considerably in spite of an ample supply of milk, I have found that as far as ordinary analysis could show the milk was perfectly good; nevertheless the substitution of hand-feeding, partly or entirely, has been followed by immediate improvement. I have no explanation to offer for this occurrence, but it suggests that there are subtler constituents in milk than proteid, fat, and sugar." Some source of toxæmia such as is here suggested would appear to supply an explanation of the symptoms as well as of the improvement which followed a change in the milk-supply.

CASE 3.—A woman, aged 37, sought advice about her seventh child, aged 14 weeks. All the other six were alive. They had been difficult to rear, for breast-feeding had never been successful for more than three months. The majority had required artificial feeding during the second month. One had been hand-reared from birth. Questions elicited the following facts. During the lying-in period the milk was always plentiful after all her confinements, but within a few weeks the child habitually preferred the left breast to the right. The "draught" gradually ceased to be felt on the right side, and suckling was continued from the left side only. At or about the sixth week the left breast would fail to satisfy the child's needs and would be supplemented by bottle-feeds. This measure was always followed by the complete failure of lactation. This, or slight variations of it, is an extremely common sequence of events, though its mention is usually withheld. The left side is preferred by the child because it is habitually carried on the left arm, and is awkwardly held by the right. The right breast ceases to secrete from lack of regular stimulation; the left fails from being overtaxed. In this instance the woman was advised to use both breasts at each feed, making the child take the right before the left. A small quantity of cow's milk was ordered after each feed to ensure the child's satisfaction and so enable a proper interval to elapse between the meals. The plan was adopted with considerable scepticism, but a week later came the report that the "draught" was again felt in the right breast. After a fortnight the supplementary feeding was discontinued and the rate of gain in weight proceeded satisfactorily until the child was five and a half months old. (Chart 3.) At this point lactation showed signs of failing. The rate of gain ceased and a loss of weight occurred. The

² Common Disorders of Children, 1910, p. 21.

breast-feeds gave less satisfaction, and the infant awoke in the night and demanded a meal when previously he had slept peacefully. The mother complaining of headaches, neuralgia, and indigestion, declared the tax of suckling was beyond her powers. After some discussion she now agreed to take the advice given at the first visit

CHART 3.



Case 3.—Weight curve of child. Lines as before. The arrow indicates the extraction of six maternal teeth.

and had six badly diseased teeth extracted. Her health improved conspicuously, and her regrets at having delayed treatment were as sincere as her previous assertion that she was perfectly well. The child continued to thrive, obtained from the breast all the milk he required and was weaned at the age of 14 months. He could walk without support before he was 10 months old, an achievement which had not been reached by any of the other six before the age of 16 months.

In the above example the need for artificial feeding was first threatened as the result of mismanagement when the child was about four months old; it appeared to be again called for at the seventh month on account of the woman's ill-health. The part played by the first factor in the previous failures of lactation was presumably the same. It is not possible to say anything about the effect of oral sepsis on the mother's health; it appeared to be of long standing.

The cases selected as illustrations have been chosen from nearly 200 in which the presence of dental sepsis interfered with the power of nursing an infant. Improvement capable of registration was achieved in 80 per cent.; in the remainder opportunities for recording its effects did not occur—some were lost sight of, and some did not complete the treatment. To the suggestion that herein lies the cause of many instances of the failure of lactation there are drawbacks, not the least being the heavy burden of responsibility which this disease has been asked to carry. Considerable disagreement is apt to occur in discussions which attempt to fix the point at which disease of the teeth is related to disorders in other parts of the body. Yet there seems no way to avoid the conclusion that to its other disadvantages must be added that of playing a very disastrous part in vitiating the course of breast-feeding.

The somewhat elaborate description of the cases will, it is hoped, be excused in view of the difficulty of isolating the essential points of the subject. It follows from what has been said that the earlier treatment is obtained the better. It is difficult to suppose that a condition which can influence a child so profoundly through its parent after birth, can fail to exert effects during intra-uterine life. Research into the association between dental disease and the occurrence of miscarriage and the birth of premature children of weakly physique might well produce important results. It might be hazarded that the appointment of a dental surgeon to the staff of every maternity hospital would greatly increase the utility of these institutions.

The opportunity to present the subject in its present form was intimately dependent on the diagnostic and operative skill of the dentist. Mr. H. C. Highton has devoted his time in the most ungrudging manner to this investigation, and the results quoted bear their own testimony to both his judgment and ability.

Gray's Inn, W.C.

MASSAGE AND MEDICAL ELECTRICITY IN THE AFTER-TREATMENT OF CONVALESCENT SOLDIERS.

ACCOUNT OF THE MECHANO- AND ELECTRO-THERAPEUTICAL DEPARTMENTS AT THE COMMAND DEPÔTS AND CONVALESCENT CAMPS.

By FLORENCE BARRIE LAMBERT, M.B., B.S. DURH.,
D.P.H.,

INSPECTING OFFICER OF MESSAGE AND ELECTRICAL DEPARTMENTS
ATTACHED TO COMMAND DEPÔTS AND CONVALESCENT CAMPS.

WHEN the medical history of the war comes to be written the Director-General's scheme for the establishment of Convalescent Camps, where the work of the general military hospitals can be completed and large numbers of men restored to the fighting service, will be ranked at its full value. That it has not received its full recognition up to the present is due to the quiet and gradual way in which the whole scheme of after-treatment has been set on foot. The public might be led to suppose from the articles which have lately appeared in the lay press that we in this country have very little in the shape of an organised scheme for the after-treatment of our convalescent soldiers, and even in quarters which might be expected to have the fullest information there seems to be a disposition to magnify French achievements rather at the expense of our own. Thus in the report of the Special Committee of the Balneological Section of the Royal Society of Medicine appointed to consider the treatment of disabled soldiers by physical remedies there appears the following statement:—

Up to the present time physical remedies have not been used with the same thoroughness and precision as in France. In England heat, moist and dry, massage, and electricity are, of course, used throughout the country, and in a few cases baths and mechanical movements are being added. What is wanted is a combination and association of these powerful agencies under skilled direction. We think that a clear case has been made for the introduction of physical treatment upon an adequate scale into this country for the benefit of disabled and discharged soldiers. It is true that the *eau courante* bath of the French or the analogous whirlpool bath used in England has been adopted in some British hospitals. This, however, is but a single item in the treatment to which we refer, although its adoption may be regarded as a tacit admission of the good results that are being obtained by our French and Belgian allies.

Such a statement is misleading in that it passes over as practically non-existent the splendid work of the Command Depôts and Convalescent Camps, chiefly because the *eau courante* bath has not been installed broadcast. After all, this mode of application is still in its infancy, and while one is always anxious to test any new and improved methods of treatment, it will be very interesting, to say the least, to have the views of the medical profession two years hence on the efficacy of the *eau courante*, now very much on its trial, when compared with ionisation, radiant heat, diathermy, and massage in the treatment of ankylosis and similar conditions. It is noteworthy, however, in this connexion, that in recent statistics published by the War Office of men returned fit to their units from the Command Depôts, Randalstown heads the list. Owing to the very imperfect water-supply it has been found impracticable to install any form of hydrotherapy at Randalstown, and, therefore, only these latter time-honoured methods of treatment have been available.

The physical and electrical treatment of convalescent soldiers is by no means so lacking in coördination and skilled direction as certain criticisms might lead one to infer. It is necessary to be actually at work in the camps in order to appreciate how thoroughgoing a system it is which is being set up; but even a casual visitor would find it a revelation were he to go to any of the camps (say the one at Epsom, which is the most accessible from London) and watch the work carried on any morning or afternoon inside the massage and electrical department.

The Convalescent Hospital Camps.

Before the first six months of the war were over it became apparent to the Director-General that a great number of men were being discharged from military and Red Cross hospitals who, on account of stiff joints or injured nerves, were unable to return to duty, although they no longer required hospital treatment. These men were at first given extended leave at home, and were dealt with in out-patient departments

attached to the civil hospitals and in various special centres of treatment. Mr. and Mrs. Almeric Paget's massage and electrical centre at Portland-place, which I organised with the help of the Hon. Essex French, can, I think, claim to be the parent of the mechano-therapeutic departments subsequently attached to the Convalescent Camps, for it was after inspecting this centre that the Director-General asked that similar departments should be organised in connexion with the camps. The circumstances under which many of the men were living, however, militated against their recovery, and then it was that the Director-General instituted, at Eastbourne, the first of the great medical Convalescent Hospitals or Camps.

The idea governing this scheme was that men discharged from hospitals and convalescent homes should receive a final six weeks' treatment before being returned to their unit. Unfortunately, the first batches of patients were largely unsuitable, many of the men suffering from injuries so severe as to incapacitate them from all further service, while in other cases a year or more would have been required to effect a cure. The result was that a great many patients had to be returned to the hospitals. Eventually, however, the work at the camp settled down to the normal level, and the cases dealt with were of the kind for which the scheme was intended—namely, cases of stiff joints, slight nerve injuries, trench feet, fibrositis, &c.

A large mechano-therapeutic department was established in the camp to which I was appointed medical officer in charge. The electrical installation comprised 14 wall switchboards, worked from 50 accumulators, each of two volts, and furnishing galvanic, faradic, and combined currents as required. There was also a plentiful supply of local radiant heat, and Schnee four-cell baths, and vibrators worked from the main. As a great number of assistants were necessary whom it would be difficult to supervise in detail, it was thought well to keep the apparatus as simple as possible. Subsequent experience of many departments attached to Convalescent Hospitals and Command Dépôts has strengthened my opinion that, where a large staff is necessary, the simpler the apparatus the better the result.

At the outset we were faced with the problem that although a fair number of masseuses and remedial gymnasts were available, the supply of electricians was very limited, and there were no reserves to draw upon. We got over the difficulty as well as possible by splitting up the staff of 25 masseuses into squads of 5, placing in charge of each squad a masseuse who was known to be a skilled electrician, and making her responsible for the work and tuition of those under her. The plan proved very satisfactory, and was afterwards adopted in the camps at Epsom and Dartford, with the result that when, some six months later, the Command Dépôts were started we had a nucleus of experienced and practical electricians to draw upon. At present most masseuses, before starting work, take a course in electricity, and thus come with the advantage of some practical experience in the working of the delicate apparatus entrusted to them.

The standard for masseuses employed in military work is that they shall have had not less than six months' training, and shall either hold the certificate of the Incorporated Society of Trained Masseuses or satisfy a board of examiners set up by the War Office. The great bulk of the military workers—90 per cent. is probably an under-estimate—hold the certificate of the society. We have the safeguard, therefore, that our workers are trained women. The training may not in all cases have been as complete as we could wish, but when comparisons are made with the conditions on the other side of the Channel, it is well to remember that the length of training in this country is in very favourable contrast to that which is considered sufficient in France.

The camp at Eastbourne is a large one, with 3000 patients, and the visits to the electrical department each day vary between 600 and 800. By dovetailing the radiant heat and electrical applications and the massage, it is found possible for each masseuse to treat from 20 to 22 cases a day, each case receiving from 20 to 30 minutes' treatment, and in some cases longer. In July of last year I was appointed medical officer to similar Convalescent Camps which were established at Dartford and Epsom. The Dartford camp is comparatively small, with only 1200 patients, and never more than from 150 to 200 daily treatments in the department; at Epsom the camp is very large, with 4000 patients

and between 500 and 700 men treated daily. Both camps have been fitted with apparatus similar to that installed at Eastbourne. There are now five Convalescent Camps in all, the two latest being in the North of England, and although statistics can only convey a skeleton-like notion of such work as this, some figures may be of interest:—

| | A. | B. | C. | D. | E. |
|----------------|-------|--------|-------|-----|----|
| Eastbourne ... | 2,880 | 26,760 | 2,696 | 772 | 29 |
| Epsom ... | 4,000 | 29,642 | 3,050 | 730 | 25 |
| Dartford ... | 1,200 | 9,502 | 957 | 207 | 11 |
| Blackpool ... | 2,113 | 4,319 | 2,030 | 525 | 20 |
| Alnwick ... | 2,080 | 7,536 | 1,878 | 512 | 20 |

A. Total capacity of camp. B. Total number of men passed through the dépôt. C. Number of men in camp on Sept. 20th. D. Number of men undergoing massage, electricity, and special exercise treatment on Sept. 20th. E. Number of masseuses.

The Command Dépôts.

Even the Convalescent Camps proved not to be the last word in this system of after-treatment. It was found that after six weeks or so in such a camp there was a residue of men who, although quite capable of being cured, would require a much longer period—anything from four to six months. To provide for these cases the Command Dépôts came into being. These are camps in which convalescent soldiers belonging to particular commands are grouped, and their administration resembles rather that of a military barracks than that of a hospital. The men are in khaki, and are subject to more fatigues and drills. The military commandant is at the head of the camp, the medical officer being the senior medical officer.

To some extent the Command Dépôts have become places for separating out the unfit, for the cases treated are necessarily of a very chronic type. There are periodical inspections by medical boards, when men incapable of further military service are discharged and pensioned. All cases in which there appears to be no improvement and in which surgical interference may be desirable are periodically paraded and examined by the Inspector of Orthopædics or his representative.

Some idea of the life of a patient in a Command Dépôt may be given in order to illustrate what a finely coordinated scheme it is which has been put in practice. Usually the patient arrives at the dépôt in the evening and goes straight to the Welcome Hut, run by ladies of the district, where he gets a good meal. He then goes to his company, and is told to report to the senior medical officer next morning. He is duly seen by his company's medical officer, and all details of his history and condition are set out on a card, after which he is grouped for treatment. This grouping and the scheme of treatment generally varies to some extent in each dépôt according to the ideas of the senior medical officer in charge. A representative instance may be taken in the six groups into which the men are divided at Seaford:—

Group I.—Men practically fit, but requiring a final hardening process. Subjected to drill, route-marching, fatigues, and gardening.

Group II.—Men receive physical drill under Aldershot drill-sergeants and staff, and have short route-marching, light fatigues, and general sports.

Group III.—Men have walks, physical training, light fatigues, and lectures on personal hygiene and other topics of interest.

Group IV.—Mostly medical cases, such as nephritis and heart affection, and convalescence after abdominal operations, pleurisy, &c. Subjected to walks, light physical training, gardening, and lectures.

Group V.—This group comprises the larger proportion of the massage cases, such as stiff joints, trench feet, nerve injuries, and sciatica.

Group VI.—Cases of shell-shock or cases so shattered as to be unfit for any form of exercise other than gardening, and walks, and certain special movements to improve co-ordination.

The men are kept under strict observation and continual medical inspection, and are passed up or down the scale according to their physical ability. The senior medical officer personally sees every man before he is transferred to a different group after the preliminary selection by the medical officer.

When a patient is sent to the massage department a fresh card is made out on which all particulars are entered and the required treatment also set down. Here he receives the exercises and movements and electrical and heat applications which are suitable to his case. If it is thought necessary, he is also given remedial gymnastics, or, as it

is sometimes called, re-education of movement. This department is in the hands of remedial gymnasts who have received two years' training. I give below a table of the remedial gymnastics ordered for the convalescents at the Heaton Park Dépôt, where Major Tait McKenzie, who is professor of physical education at Philadelphia University, sets great store upon physical exercises.

No. 2. Remedial Exercises: Single Shoulder (Tait McKenzie).

a. Movement with resistance.—(1) Arm raise sideward with resistance; (2) arm lower sideward with resistance; (3) arm raise forward with resistance; (4) arm raise backward with resistance; (5) arm circumduct with resistance.

b. Pulley weight.—(1) Position: Side to, arm sideward raised. Movement: Arm forward across chest, elbow straight. (2) Position: Side to, arm sideward raised. Movement: Arm upward raise, elbow straight. (3) Position: Side to, arm sideward raised. Movement: Arm downward and forward, arm downward and backward alternating. (4) Position: Side from, arm across chest. Movement: Arm sideward, elbow straight. (5) Position: Side from, arm downward and behind. Movement: Arm side upward raise (floor attachment).

c. Shoulder machine.—Stretching contractures up to point of pain (if pain persists discontinue and report).

The dépôts bear a general resemblance to each other, but, naturally, both the equipment and the methods vary according to the individual views of the senior medical officer. At Ripon, for example, the Bergonié current—i.e., a rhythmically interrupted and reversed faradic current—and leucodescent lamps are used in preference to radiant heat or ordinary faradism; at Blackpool high frequency is largely employed; and at Tipperary a scheme for teaching men trades is being developed—a kind of educative convalescence.

The average length of time a man remains in each dépôt is from 2½ to 3 months. After being hardened in Group I, he is then, if fit, transferred to Army category A, B, or C. There are various subsections in each category, but, generally speaking, the men in A undergo full military training and are returned to their units in 10 or 14 days ready for transport overseas with the next draft. In category B the men, although physically sound, are withheld from general service by reason of some disability, such as old fractures, "football knees," amputated fingers, and the like, and such men are passed for garrison duty. In category C the men are considered only fit for duty at home and for sedentary occupations. The extent of the work carried out in the Command Dépôts may again be put to the test of figures:—

| | A. | B. | C. | D. | E. |
|-----------------------|-------|-------|-------|-------|----|
| Heaton Park ... | 4,000 | 8,020 | 3,356 | 477 | 31 |
| Kinnel Park, Rhyl ... | 4,000 | 6,500 | 3,000 | 270 | 12 |
| Shoreham ... | 4,400 | 9,539 | 3,243 | 411 | 13 |
| Seaford ... | 3,887 | 7,002 | 3,713 | 1,024 | 40 |
| Sutton Coldfield ... | 2,300 | 5,687 | 2,376 | 791 | 24 |
| Ripon ... | 4,080 | 5,587 | 1,319 | 806 | 15 |
| Ireland: | | | | | |
| Ballyvonnare ... | 3,500 | 3,110 | 1,962 | 374 | 18 |
| Randalstown ... | 4,000 | 2,616 | 2,441 | 586 | 20 |
| Tipperary ... | 4,000 | 1,312 | 1,848 | 777 | 26 |

Total Number of Men Undergoing the Special Treatment in the Convalescent Camps and Command Dépôts.

46,440 ... 127,132 ... 33,869 ... 8,262 ... 304

A. Total capacity of camps. B. Total number of men passed through the dépôts. C. Number of men in camp on Sept. 20th. D. Number of men undergoing massage, electricity, and special exercise treatment on Sept. 20th. E. Number of masseuses.

French and British Methods of Mechano-therapy.

In conclusion, a few words may be said with regard to the salient points of difference between French methods and our own as they suggested themselves to me during a recent visit to Paris.

(a) The first point to note is that in France the men are more often treated as out-patients, whereas our men are treated in camp, and are, therefore, subject to a more continuous routine both of treatment and discipline.

(b) In an examination the French lay more stress than we do on electro-diagnosis; each man is also measured more fully than is usual in our camps.

(c) In actual massage the French work is not to be compared with our own. As I have already pointed out, no one in this country is employed in military work with less than six months' training, while in many cases the training has been prolonged for a year or two years. In France, on the other hand, there is no trained body of masseurs or masseuses comparable to the Incorporated Society of Masseuses. In

July of last year the French military authorities were compelled to start a training school for massage at the Grand Palais, in Paris, where there is also a large *hôpital complémentaire* for cases that require physical remedies, but the training is inadequate—at least, according to our standards. The tuition lasts for one and a half hours every day for a month, half of this daily lesson being devoted to anatomy and the other half to massage.

(d) As regards medical gymnastics and the so-called re-educative movements, the French rely mostly on the Zander apparatus, which has never been popular in England. Its vogue in France is not due to any conviction as to its soundness, but simply to the fact that there is no trained body of medical gymnasts to do the work. Our corresponding treatment is mostly in the hands of medical gymnasts who have either taken the extra six months' course in medical gymnastics in addition to the massage course or hold the two years' certificate of one of the physical training colleges. There are few who will not agree that passive mechanical exercises can never give the same results as good manual work.

On the whole, although British mechanotherapy has still many things to learn, the reproach of lagging behind our Continental Allies cannot justly be urged either with regard to our physical methods in particular or our system of after-treatment in general.

ULTRA-VIOLET RADIATION FROM THE TUNGSTEN ARC.¹

By W. J. TURRELL, M.A., M.D. OXON.,

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At a meeting of the Section of Electro-Therapeutics of the Royal Society of Medicine in January last Dr. E. P. Cumberbatch and Dr. A. Macgregor read notes on several cases treated by the so-called Simpson light. Most of these cases were either cured or showed marked improvement. Dr. J. H. Sequiera at the same meeting clearly demonstrated the non-penetrating character of this radiation and its identity with the already known method of treatment by ultra-violet radiation. Dr. Sidney Russ also showed that, tested by the spectroscope, the radiation from the Simpson or wolframite electrodes was practically identical with that from metallic tungsten. It was, I think, perfectly obvious from the papers and discussion that evening, if tungsten was readily obtainable and burnt satisfactorily in an arc consuming a small amount of current, that the metallic electrodes would prove a far more satisfactory source of ultra-violet radiation than electrodes made from the impure ore. I endeavoured without success for some months to obtain a supply of tungsten from the makers of electrical apparatus and from other sources. I was told on every hand that tungsten had always been very difficult to obtain, and that since the war it had become practically unobtainable. Discouraged by this failure, I had at last to have recourse to the Simpson electrodes both in my private and in my hospital work. These electrodes I found burnt badly, always with much spluttering, and frequently requiring grinding before they would burn at all. They were, moreover, very expensive, as they cost £2 the pair and were very quickly consumed. Subsequently, as a great favour, I obtained two short rods of tungsten each about 1½ inches in length. These I found burnt very steadily, produced what I may call the erythema dose in a comparatively short time, and were very slowly consumed. Patients whom I had already treated by radiation from the Simpson electrodes, and whom I subsequently treated by the tungsten radiation, all expressed themselves as having been more benefited by the radiation from the metal. This increased benefit was, I think, due to the greater intensity of the radiation from the metal, and the greater accuracy with which the dose could be administered owing to the more steady flame.

A short time ago I had the good fortune to be placed in communication with the British Thomson Houston Company of Rugby, and they very courteously supplied me

¹ A paper read before the Section of Electro-Therapeutics of the Royal Society of Medicine on Oct. 20th, 1916.

with a number of tungsten rods of different sizes. They assure me that there will not be the slightest difficulty in supplying any quantity of these rods that is likely to be required for medical purposes. The price will be only a few shillings for a pair of electrodes. This will compare favourably with that charged for the Simpson electrodes, especially when it is borne in mind that the metallic electrodes last about ten times as long. The Simpson lamp, costing £25 to £30, sold for the wolframite electrodes, struck me from the first as a needlessly costly and bulky piece of apparatus, for there seemed to be no reason why a simple arc lamp with sufficient insulation to take a current of 15 ampères should not answer every purpose required. After some search I bought a No. 9 empire arc lamp for £3 3s. from Messrs. Butcher and Sons, of Camera House, Farringdon-avenue. This proved such a satisfactory lamp for the purpose that I have bought a similar one for the hospital.

At my house I work my lamp off my X ray resistance, clamping the lamp to the tube stand so that it can be readily raised or lowered. If one has not a suitable resistance this piece of apparatus will cost an additional £4 9s. 6d. The price of this lamp has recently been raised 12s. In my hospital work I have been using an ampèrage of 9 to 11; in my private practice I use about 7 ampères. With the present pressure in hospital work it is necessary to make the exposures as short as possible. Moreover, the heavier currents seem indicated by the researches of Cernovodaeno and Henri, who found that a 24-hour culture of colon bacilli was completely sterilised in one second at a distance of 20 cm. with a current of 4·7 ampères at a voltage 140, whilst with 2·3 ampères at 23 volts an exposure of 300 seconds was necessary to sterilise the culture.

The therapeutic value of ultra-violet radiation appears to be due to its destructive action on micro-organisms and to the active hyperæmia which it induces in the superficial tissues. The latter is probably of the greater clinical value, and within certain limits the intensity of the erythema produced in the skin in a given time may be taken as a measure of the clinical efficiency of the radiation from the different arcs. In conjunction with Mr. C. A. Schunk, of Ewelme, near Oxford, I recently made a few simple experiments on this erythema dose. Different areas of the skin of the forearm were in turn exposed to the action of the following electrodes: Simpson electrodes, metallic tungsten, cored carbons containing uranium oxide, Ur. 308, with others containing the powders of tungsten, wolframite, and iron. The exposure was for five minutes at a distance of 12 inches with a current of 5 ampères. The most intense erythema was obtained from the metallic tungsten; the next in intensity was that from the Simpson electrodes. None of the other electrodes produced any erythema in the five-minute exposure.

At Oxford we use the two methods of treatment by the ultra-violet radiation—that is, by the use of a reflector and by the use of a quartz condensing lens. In using the reflector method the structure of the mirror is of considerable importance when dealing with wave-lengths of the ultra-violet region. Silicon, which reflects 75 per cent. of the ultra-violet rays, is the most efficient. Nickel reflects 40 per cent., copper 35 per cent., and silver only 6 per cent.² In this method of treatment the patient is placed about 12 inches from the arc and the reflector confines the radiation as nearly as possible to the treated area. We usually adopt the focussing method; in this the quartz lens is held in a wooden shield and the rays are focussed on the area to be treated. In the treatment of granulating wounds special attention is directed to the stimulation of the granulating edges. The shield holding the lens should be sufficiently large to protect untreated areas from the action of the light.

In administering tungsten radiation special attention should be paid to the protection of the eyes of the patient and operator. Hooded frames containing No. 2 Crookes' glass should be worn. I am showing a pair of such glasses made by the Oxford Optical Company. I think also, if much treatment is done, a mask or veil should be worn by the operator, or it might possibly be more convenient to fit a shield to the lamp to cut off the extraneous rays.

In addition to the large lamp, which, of course, requires heavy wiring, I am showing a small lamp, which only takes

4½ ampères and can therefore be used from the ordinary lighting circuit. Smaller electrodes are used in this lamp; a finer point of light is obtained which is very convenient for the focussing method. A suitable lamp for this purpose can be purchased for about £2, including the necessary resistance. In the selection of cases for ultra-violet radiation it is important to bear in mind the superficial action of this treatment. Indolent and extensive sloughing wounds have been much benefited, but the results obtained have been much better where one or two preliminary treatments by zinc or chlorine ionisation have been administered. In barbers' itch and pustular eczemas the treatment has been very useful, but here again preliminary zinc ionisation conduces to a speedy cure. Certain cases of ulcerating lupus have improved. The nodular type with little or no ulceration has not been benefited unless previously fulgurated. Cases of eczema of the face and arms have done very well, some of them very old-standing cases. Eczema of the hands, where, of course, the skin is thicker, has not done so well. A case of lupus erythematosus shows at any rate temporary improvement. The treatment of rodent ulcer by ultra-violet light, unless the case has been freely fulgurated, has not been successful in my hands; the treatment by radiotherapy of these cases is far more satisfactory. The erythema set up by the radiation is sometimes useful in allaying the pain of neuritis.

It has been suggested that ultra-violet radiation might be more conveniently and more efficiently administered by means of a tungsten filament in a quartz globe. The B.T.H. Company constructed for me a 1000-watt 100-volt tungsten filament lamp of 2000 c.p. Mr. Schunk, on examining this lamp with the spectroscopic, found that its spectrum stopped at 3700, and was therefore useless for ultra-violet radiation. This result was, of course, to be expected, for when a solid body is heated to incandescence, the wave-lengths stop at about 3500, and a continuous spectrum is obtained. This spectrum is the same with different solids, and does not extend far into the ultra-violet region. On the other hand, in using metals in an electric arc, the metal is heated to volatilisation, and the specific radiation and spectrum of the metal used is obtained. With a mercury vapour arc as in the Kronmeyer lamp there are a few very intense lines in the ultra-violet region, but with the tungsten arc there is almost a continuous spectrum in that region.

The therapeutic value of ultra-violet radiation has been established for some years. The electric arc is the simplest and most convenient means for its production. The amount of ultra-violet radiation obtainable from any metallic electrode appears to be directly proportionate to the melting-point of the metal. Tungsten has the highest melting-point of any metal obtainable, therefore tungsten arc electrodes would appear to be the most efficient source of ultra-violet radiation at present available. I should like, in conclusion, to express my indebtedness to Mr. Schunk for much valuable information in regard to the physical properties of ultra-violet radiation. Since writing this paper I have received the following letter from Mr. Schunk, from which it will be seen that the conclusions he arrives at are in accordance with those stated above. He says:

"The following are the tentative results I have arrived at, and of which, if of interest, please avail yourself on Friday:—1. The tungsten arc is the most intense source of ultra-violet light so far experimented with, the lines being so numerous and close together that they constitute almost a continuous spectrum. 2. The Simpson electrodes give the tungsten spectrum with the addition of the iron lines, but on the photographic plate with the same exposure and ampèrage are not so intense, no doubt this is due to the unsteadiness of the arc compared to that from the tungsten rods. 3. Half-inch cored carbon electrodes filled with wolfram (75 per cent. tungsten and 25 per cent. iron) burn very steadily and give an identical spectrum as the Simpson electrodes, but the intensity as recorded on the photographic plate is not quite so intense. 4. The iron arc is very rich in lines in the ultra-violet region, but compared to tungsten fails at about wave-length 2500, whereas tungsten extends to wave-length 2160 without much diminution. 5. From the spectroscopic point of view, giving the Simpson electrodes and the carbons cored with wolfram an increased exposure compared with the tungsten arc, one would expect to get the same result from the ultra-violet light treatment point of view.

Hyperæmia experiments.—Using the tungsten arc and a quartz cylindrical condenser, forming an image 18 inches from the condenser, about ½ inch wide, in the form of a strip on

² The Reflecting Power of Metals in the Ultra-violet Region of the Spectrum, *Astraphysical Journal*, p. 205, vol. xlii., 1915.

the skin: 1. A piece of ordinary thin photographic glass. No reaction in $2\frac{1}{2}$ minutes. Spectroscopic examination 3000 wavelength recorded. 2. A piece of microscopic cover-glass. An appreciable reaction in $2\frac{1}{2}$ minutes. Spectroscopic examination 2700 recorded. These tentative experiments tend to show that radiations of 3000 Angström units and upwards have no effect as judged by the hyperæmic effect, whereas from 2700 to 3000 wave-length there is an effect."

Oxford.

Clinical Notes:

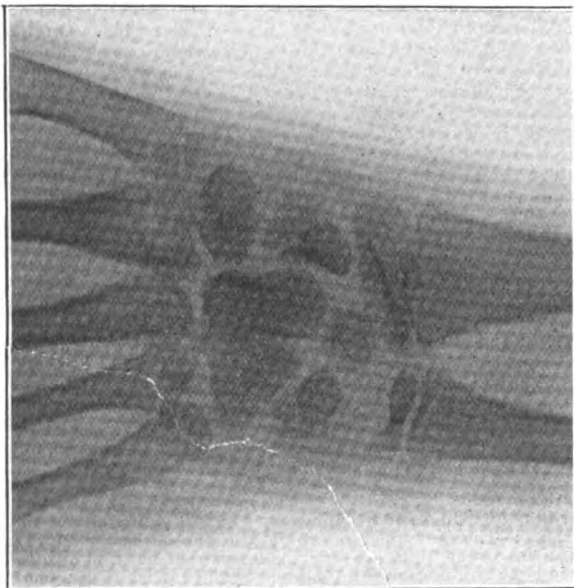
MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF FRACTURED SCAPHOID AND OS MAGNUM IN A BOY 10 YEARS OLD.

BY CLAUDE GOULDESBOUGH, M.B., B.CH. OXON.,
M.R.C.S., L.R.C.P. LOND.,

ASSISTANT SUPERINTENDENT, X RAY DEPARTMENT, AND MILITARY RADIOGRAPHER, ST. THOMAS'S HOSPITAL, S.E.; AND LATE CONSULTING RADIOGRAPHER, BRITISH EXPEDITIONARY FORCE.

THE excuse offered for publishing this case lies in its rarity. Fracture of one or more of the carpal bones in an adult is comparatively common, especially the scaphoid, although injury to the unciform and pisiform is very rarely seen. It is a different matter, however, in the case of children; in their case the part which suffers in most wrist injuries is the epiphysis of the lower end of the radius, which is displaced forwards or backwards, taking with it a chip of bone of the adjacent diaphysis. Fracture of carpal bones in children must be very rare—the records of



St. Thomas's Hospital fail to show, as far as can be seen, any case of this type of injury. It is therefore very interesting to come across a juvenile wrist showing fracture of two of the small bones, but there is also another interest attached to this case to which reference will be made later, and that is the subject of repair. The history of the case is as follows:—

The patient, a boy of 10—a case under the care of Dr. Edward Hedley—was sent to me because of an accident a fortnight old which occurred when he was endeavouring to land a small rowing-boat. His hand was crushed apparently between the prow of the boat and the stone wall of the harbour. The injury was pretty severe, and apart from some swelling at the time he sustained loss of function in his hand in a way that suggested some damage to the median nerve. When I saw him a fortnight after the accident he was still unable to "make a fist," but two days later,

according to Mr. C. A. R. Nitch, who was called in to give him surgical treatment, this power had returned. I noticed at the time that the patient had pain on pressure directly over the scaphoid, but dismissed the idea of fracture of that bone from my mind as being hardly possible. The appearance of the fracture suggests, I think, a direct injury, and the history rather supports the view that the damage was caused by the sharp edge of metal on the prow of the boat striking the hand in an oblique direction corresponding roughly with the line of fracture of the two bones.

It will be interesting to follow the future of this case from the point of view of union. It is a well-known fact that in adults very rarely, if ever, does a fractured carpal bone unite, at any rate by bony union. From X ray appearances it is impossible to distinguish an old from a recent injury—both presenting exactly the same appearance. In the case of this patient I understand that at present no operative measures are intended, the surgical treatment being limited to extreme hyper-extension at the wrist-joint with immobilisation in this position in order to give the best possible chance for union to take place. Skiagrams taken at intervals—considerable intervals—ought therefore to shed some light as to whether the prognosis in cases like this is as bad as it is in cases of adults.

Welbeck-street, W.

PREGNANCY COMPLICATED BY INCREASED CEREBRO-SPINAL PRESSURE;

SURVIVAL OF MOTHER AND CHILD.

BY NORMAN GRAY, M.A., M.B., B.C. CANTAB.

THE following case appears to me to be of some interest to general practitioners, and as, to my knowledge, no similar case has been recorded during recent years I propose to give a short account of it and of the treatment adopted.

On June 9th, 1916, I was sent for to see a multipara, aged 38, whom I found complaining of very severe headache, sickness, and feverishness. She said she had not been feeling well for some weeks, but had kept about her work until that day.

On examination I found that the patient was about seven and a half months pregnant, the foetal heart being quite audible. The symptoms were very indefinite at that time and the woman appeared to be suffering from some acute gastric disturbance. During the next few days, however, the pain in the head and the vomiting increased, while there slowly developed marked rigidity of the neck and back, with retraction of the head. The tongue was now thickly coated and the bowels were obstinate. The pupils were equal and reacted normally. The abdominal reflex was greatly increased, as were also the knee-jerks. The plantar response was doubtful in both feet; ankle clonus was once obtained with the right leg, but not with the left. The urine was examined and found to be normal in every respect, and this was always the case in repeated subsequent examinations. The temperature varied between 100°F . in the morning and 103° in the evening, while the pulse was usually about 80. The vomiting was by this time very frequent and severe, and the patient was quite unable to obtain any sleep. After four sleepless nights, during which time various hypnotics were tried, I gave her a hypodermic injection of heroin gr. 1/6 and hyoscine hydrobrom. gr. 1/100. This appeared to have a most beneficial effect, and the patient slept for five hours. This injection was repeated on several occasions, and although the amount of sleep obtained was never as great as after the first dose, yet each injection was followed by a certain period of sleep.

On the ninth day I performed lumbar puncture under a general anaesthetic, and found the cerebro-spinal fluid to be under great pressure. Slightly over three ounces of clear fluid ran away and this was found on bacteriological examination to be sterile. On recovering from the anaesthetic the patient was rather collapsed. Her temperature fell to below 95° where it remained for two days, and then it slowly rose to normal, never again going above 99° . The pulse-rate was not much altered, and it remained at about 80. There was an immediate improvement in the retraction of the head, which became less marked each day. There was a little vomiting after the anaesthetic, but this had ceased within 12 hours. The patient was still troubled with sleeplessness, but with the aid of chloral hydrate, gr. xx., this difficulty was overcome.

On the fourteenth day, five days after the lumbar puncture, the patient went into labour, and was rapidly delivered of a rather small but healthy male child. The puerperium was normal in every respect, and the child, after wasting a little for the first week, soon began to put on

weight. It is now four months since the child was born, and the mother, who is about the house again, only complains of rather frequent headaches.

It would have been most interesting to know the cause of this great increase in the cerebro-spinal pressure. Unfortunately there was some delay between the lumbar puncture and the examination of the fluid. This may account for the fact that the fluid was sterile. Several somewhat similar cases have occurred lately among soldiers in which the influenza bacillus has been found in the cerebro-spinal fluid, and it seems to me that this was most probably the organism in this case.

The most interesting points in the case appear to me to be: (1) The great improvement following lumbar puncture; (2) the beneficial effect of heroin and hyoscine in producing sleep; and (3) the healthy state of the child at birth and up to the present time.

Newmarket.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

Orthopaedic Principles and Methods in Military Surgery.

A MEETING of this society was held on Oct. 23rd, Lieutenant-Colonel D'ARCY POWER, the President, being in the chair.

Mr. DAVID McCRAE AITKEN gave a demonstration of cases illustrating *Orthopaedic Principles and Methods in Military Surgery*.¹ The demonstration consisted of a series of cases illustrated by lantern slides showing the X ray appearances, the deformities, the method of treatment adopted, and the results of the treatment. In many instances the lantern slides were supplemented by plaster casts, paintings, and the patients themselves in their present stage of treatment. The arrangement of cases was intended to point out that restoration of function can be secured in many cases by perseverance in gentle means when no such success could be obtained by any rapid measures. The first series of cases consisted of patients who had lost the head and neck of the humerus, and in some cases also the glenoid surface of the scapula. The method of treatment shown was continuous abduction of the arm in an abduction splint to allow adaptation of muscles and ligaments and the formation of an efficient false joint. The second series consisted of compound injuries to the elbow-joint demonstrating that persistent maintenance of the elbow in a flexed position gives the best opportunity for the restoration of a certain measure of movement, while any attempt at forcible movement would inevitably lead to further injury of what remained of joint surfaces and would induce a firm ankylosis. The third series illustrated points essential to, and faults which may occur in, bone-grafting operations to replace defects in the bones of the forearm. The wrist-joint was next dealt with and cases were shown which demonstrated the importance of dorsiflexion of the wrist at all costs, and the rapid recovery of movement in the fingers 10 days and three weeks respectively after wrenching into dorsiflexion with Thomas's wrench, followed by immobilisation of the wrist in plaster. The cases of injury of the lower limb illustrated the correction of errors of alignment in fractures of the long bones, including the correction of a case of traumatic coxa vara with a shortening of 3 inches which had been reduced to about 1 inch. The patient had also total paralysis of the sciatic nerve, which had been destroyed by the original gunshot wound. This was followed by a complete demonstration of the various stages of correction of a mal-united fracture of the middle of the shaft of the femur with shortening of over 2 inches, the result to day being a shortening of less than half an inch in a period of seven and a half weeks. The patient was at present walking in a Thomas walking calliper. Splints suitable for the gradual extension of flexed knees and the gradual flexion of knees stiff in extension were next shown. These were followed by a series of mal-united fractures of the leg and deformities of the foot which had been corrected by various methods. The speaker's experiences of

the correction of deformities and restoration of function in cases of trench-foot were then related. The mode of attack was, first, rest in bed and gradual correction with splints during the stages of extreme tenderness, massage to relieve pain being employed at the same time; secondly, more firm correction by moulding in plaster; and thirdly, a prolonged period of walking with the foot corrected in plaster. Throughout the whole demonstration the importance of maintaining muscular tone by means of massage, and especially by means of voluntary movement with the splints continuously worn, was given due attention.

Dr. J. B. MENNELL referred to conditions of fixation of joints in which movements and exercises led to no improvement, but great advantage followed rest in suitable positions. He spoke of the importance of keeping in function those muscles and joints which were uninjured, having often encountered cases where inattention to this rule had caused more difficulty in regaining movement in the unaffected than in the affected region. It was advantageous, wherever possible, to attempt similar exercises synchronously on the two sides, for the muscles on the affected side would often begin involuntarily to imitate the movements of those on the sound one.

Dr. D. M. BARCROFT spoke of the good results which followed the application of the same rules as those demonstrated by Mr. Aitken in obtaining recovery in muscles paralysed after poliomyelitis.

Mr. R. H. JOUELYN SWAN agreed in the main with Mr. Aitken. He recommended excision in cases of recent serious destruction of a joint accompanied by suppuration. Like Mr. Aitken, he had experienced great difficulty in obtaining recovery of function in cases of hallux rigidus and hallux valgus.

Reviews and Notices of Books.

Arboreal Man.

By F. WOOD JONES, M.B., D.Sc. Lond., Professor of Anatomy in the University of London (London School of Medicine for Women). With 81 text figures. London: Edward Arnold. 1916. Pp. 230. Price 8s. 6d. net.

IT may be said at once that the Arris and Gale Lectures, delivered by Professor Wood Jones at the Royal College of Surgeons of England in 1915 and 1916, and which now appear in book form with the title given above, constitute an important and original contribution to our knowledge of the evolution of the human body. The author has succeeded in doing a thing which many scientific men regard as impossible—he has presented a technical problem in a form which is at once new and acceptable to experts and yet which can be understood by the novice with ease and interest.

In the opening chapters Professor Wood Jones attacks the prevalent conception—one which has become traditional—that man's body represents the supreme product of creation or evolution. He passes in review the various structural parts of man's limbs—the hand, the forearm with its adaptations for supination and pronation, the shoulder with its well-developed clavicle, the foot, leg and hip—and at every point he meets with structures which have no counterpart in any mammalian order except that to which man belongs—the Primates. To find those structural and functional characters which distinguish the human and simian limbs he finds it necessary to descend to the very lowest of land-living vertebrates—the “clambering water newt” and the slow-moving and primitive tortoise. We are justified, he holds, in considering that the limbs of such primitive forms must be accepted as representing for us the structural condition of the earliest mammalian limb—the pro-mammalian forms whose fossil remains are found in deposits of the Triassic epoch. He then proceeds to answer the question: How is it that the various elements of the ancestral or pro-mammalian limb have been preserved in human limbs? His answer is that the Primates must have broken away from the early land-living mammalian stock while the primitive bones and muscles were still preserved in that stock, and that the primitive elements proved useful and were preserved in that particular form which adopted an arboreal life and used the hand and foot as grasping organs. The primitive plan on

¹ The paper will be published in full in THE LANCET.

which the limbs of man are built can only be accounted for by supposing that man's ancestry spent a long pilgrimage on the trees. It was during his arboreal phase that the vast majority of those anatomical characters which we regard as adaptations to man's upright posture were evolved.

"The upright poise of man," writes the author, "has been lauded as one of his greatest distinctions. This praise of human uprightness has, without doubt, been carried to absurd extremes, so also has the tendency to ascribe to that same uprightness a multitude of human weaknesses and disabilities. This visceral uprightness is no new thing, the readjustment has been gradual, and some measure of it has been very long established. It is easy to overdo the praise of the poise. It is equally easy to overdo the condemnation of it as a cause of many human ills."

The recognition of very primitive structural characters in man's body is no new discovery; it is one which the late Professor Klaatch emphasised. What is new is the complete and systematic method by which Professor Wood Jones has attacked the problem and the manner in which he has brought to its solution an intimate and accurate knowledge of living moving things. For him the real solution of an anatomical problem of any part lies in a painstaking inquiry as to the action of that part in the living animal. In this respect his book stands alone amongst treatises of an anatomical nature. This attitude is particularly well exemplified in his treatment of certain relations to the reproductive system. The uterus of the higher Primates is peculiar in that its cornua are greatly reduced and its body greatly enlarged; as a rule only one offspring is produced at birth; the mammae are reduced to two in number and are situated on the pectoral region; the young is nursed. At first sight these seem isolated facts, all of them inexplicable. To Professor Wood Jones all are the result of an arboreal environment. A single baby ape is as much as the mother can manage at once; with a single pregnancy the uterine cornua become unnecessary; two mammae become sufficient. They are pectoral in position because the young cling to the breast and are nursed there. The mother can nurse the young because the hands are specialised for grasping and holding.

The section of this book which is most likely to appeal to the general reader is that which deals with the evolution of the human brain. The basis on which the author builds is that provided by the classical researches of Elliot Smith. Cerebral anatomy and comparative as well as human psychology are treated as interdependent matters, and the success of this part of "Arboreal Man" lies not only in the happy conjunction of aims and methods but in the many original observations which Professor Wood Jones brings to the elucidation of complex problems. It is a book which will produce discussion and lead to a further increase of knowledge.

A Text-book upon the Pathogenic Bacteria and Protozoa, for Students of Medicine and Physicians.

By JOSEPH MCFARLAND, M.D., Sc.D., Professor of Pathology and Bacteriology in the Medico-Chirurgical College, Philadelphia, &c. Eighth edition. London and Philadelphia: W. B. Saunders Co. 1915. Pp. 878. Price 18s. net.

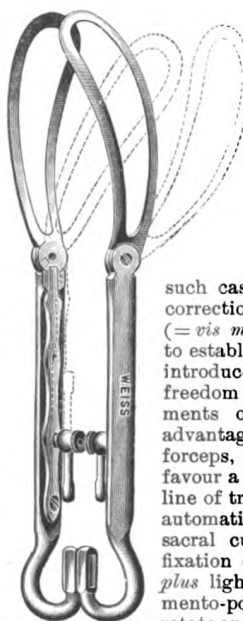
WE have in past years commented favourably upon previous editions of this text-book and have no reason to alter our views in the presence of the volume before us. It gives a very complete account of the various infective organisms—animal, vegetable, and doubtful, for the position of the spiral organisms is not yet established—preceded by general considerations on immunity, technique, and classification. Vaccines and serum reactions are also dealt with in general and in particular. The arrangement of the chapters on individual parasites is, as was previously noted, somewhat arbitrary, the protozoa not being grouped together, but scattered among the bacterial parasites. The subject-matter in the present edition has been brought up to date, the size of the pages has been increased, and small type has been employed for technical details and matters of minor importance to the general reader. The book is fully illustrated and well indexed, and forms a very commendable manual of micro-parasitology.

New Inventions.

IMPROVED OBSTETRIC FORCEPS.

THE obstetric forceps here illustrated incorporate some novel features. The cephalic portion of the blades (Fig. 1) are mobile—an arrangement that enables an automatic moulding and rotation of the head to take place without

FIG. 1.

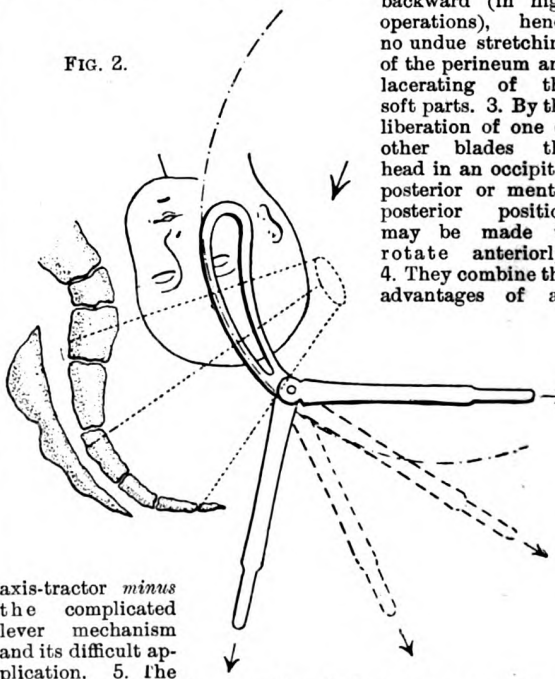


interfering antagonistically with the normal uterine contractions. The blades are so constructed that, by turning the bottom key upwards, one or both can be either fixed or liberated at the will of the operator. It is well known that in the high operation a rigid forceps when seizing an asynchronously placed head at the brim will tend to pull it down in this position at the expense of much unnecessary force and labour on the part of the obstetrician. Mobile blades in

such cases will obviously favour a gradual correction which the uterine contractions (= *vis medicatrix uteri*?) are endeavouring to establish. To remedy this defect, Tarnier introduced his axis-tractor forceps. The freedom of the forceps to follow the movements of the head constitutes a great advantage of his instrument. The present forceps, with their mobile blades, will favour a natural rotation in practically any line of traction; the blades when free will automatically adapt themselves to the sacral curve. (Figs. 1 and 2.) By the fixation or liberation of one or other blades plus light traction an occipito-posterior or mento-posterior position may be made to rotate anteriorly. To sum up, the advantages

are: 1. The movable blades allow the head to mould and adjust itself to the larger pelvic diameters of the parturient canal without the resistance of the ordinary fixed forceps. 2. Traction need only be a straight pull—not necessarily

FIG. 2.



backward (in high operations), hence no undue stretching of the perineum and lacerating of the soft parts. 3. By the liberation of one or other blades the head in an occipito-posterior or mento-posterior position may be made to rotate anteriorly. 4. They combine the advantages of an

axis-tractor minus the complicated lever mechanism and its difficult application. 5. The

blades can rarely slip, even when faulty traction is applied. The instrument has been designed for me by Messrs. Weiss and Son, 287, Oxford-street, London, W.

Barton-on-Humber.

CHAS. A. BECK, M.D., L.S.A.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 4, 1916.

The Effects of Fatigue on Industry and Efficiency.

THE effects of fatigue on industry and efficiency have been the subject of many articles and communications in our columns since this nation began to apply itself seriously to the business of winning the war, but the physiological aspect of these effects has never been put more aptly than it was last week in the Chadwick lecture delivered by Professor WILLIAM STIRLING before the Royal Society of Arts. Fatigue may be due to overwork of the whole organism or of its individual parts, and, as Professor STIRLING pointed out, both objective and subjective symptoms have to be reckoned with and the appropriate tests applied. Fatigue is a universal concomitant of life, but the diminished output associated therewith is not necessarily accompanied by any sense of fatigue recognisable by the worker. The loss of excitability may be unconscious, and, indeed, in mental work the sense of fatigue may be present when facts show that an actual increase of work is being done. This apparently illogical happening is observed in certain workers when within sight of the end of the task; feeling that so far all has gone on well, and noting that only for a space of time will the strain be continued, the worker finds that he can make a last but great call upon his unsuspected reserves—like the long-distance runner he can sprint to the tape. The phenomenon exactly contradicts the more common experience that in the closing stages of work the output dies quickly down and time is wasted. This is the difference between a conscientious worker, who takes an interest in and feels responsibility for his work, and the beast of burden.

Professor STIRLING attributed the physiological process of fatigue to two causes: the using up of organic forces or energy, and the wear and tear of the organs which are overworked, so that matter and energy are consumed while restitution does not keep pace with work. These words, though there is nothing whatever novel in their teaching, which is closely supported by the report of Professor A. F. S. KENT to the Chief Inspector of Factories upon the association between fatigue and output, call for particular attention at the moment. We all know that to keep our Army at its present state of efficiency, and to replace the wastage which, however carefully thought out the management of our forces may be, remains terribly large when such masses of men are concerned, a regular influx of recruits is required from

day to day. The age-limits for recruiting have more than once been extended as our operations have grown in magnitude, and a rigorous process of inquiry into the various headings under which exemption can be obtained from military service is proceeding to-day. This is an absolute necessity of the situation in which we stand—a very strong situation, be it remembered, if all classes of the community can be brought into line for extended coöperative effort. Those who would point to the overwork which various "combing out" processes may entail upon the residue are apt to forget that to be a soldier in time of war, and in such a war as that wherein we are involved, is also a very fatiguing occupation; and they should remember not only this fact, but also that the work of the soldier, like that of the civilian, will assuredly be subject to physiological laws and will decrease in quality and quantity if proper intervals of rest are not forthcoming. At this moment the physical conditions of our Army are of paramount importance to the nation, while the authorities are making their net as inclusive as possible. But it is necessary that recruiting should be carried on under a vigilant medical eye, for there is no economy in paying a man to fight for his country whose physical condition is so bad, or rapidly becomes so bad, that time and money have to be spent in trying unsuccessfully to bring him to a reasonable standard. The stories which have appeared in the daily press now and again detailing the recruiting of grossly unfit persons, must not be taken as a fair sample of what is going on generally; it is inevitable that all such instances of negligence or of pig-headedness should obtain publicity and should thereby gain an importance to which their numbers do not entitle them. But with our growing knowledge of the effects of fatigue upon the organism and upon the resulting work, we must all see the necessity of not supplying to the Army material that cannot reasonably be depended upon to stand the strain to be exacted.

It will be remembered that last year a committee was appointed with the concurrence of the Home Secretary and under the chairmanship of Sir GEORGE NEWMAN, the principal medical officer to the Board of Education, with the following reference: "To consider and advise on questions of industrial fatigue, hours of labour, and other matters affecting the personal health and physical efficiency of workers in munitions factories and workshops." This committee has made a number of valuable reports to the Ministry of Munitions, the gist of which was to point out that the management of our factories has hitherto been less based on experimental science than has been the case in the business concerns of Germany; and the scientific and physiological aspects of fatigue as described in Memorandum 7 show that much more could be done to deal with the problems of industrial fatigue and modify the ill-effect and reduced efficiency of the want of proper organisation. Strenuous efforts, we have every reason to believe, have been made to remedy this condition of affairs, and it is with the plight

of the munition workers that we have so far been most concerned; but it is not here probably that the effects of shortage of man power will be first felt, for the risk of depleting the munition factories and reducing their output is so obvious that it will not be taken. A large host of clerks, typists, and other sedentary workers have been employed since the war broke out in operations requiring unremitting attention and for spells which have no parallel for similar occupations in times of peace. Here women have come forward and relieved male labour to a very appreciable extent, but here also will the first effects of drastic recruiting be seen. Great responsibility may be thrown in this connexion upon the civilian medical profession—a sadly reduced body of workers. For from them will much help and information be expected if any general investigations should be carried out with a view of arriving at conclusions based upon larger evidence than any yet forthcoming; and it seems to us that some more far-reaching inquiries than any which have hitherto taken place will have to be instituted into the effects of fatigue on industry and efficiency.

The Prohibition of Alcoholic Beverages.

A MEMORIAL which is in preparation, and which has already appeared in the public press with a thousand influential signatures attached, asks the Government to suspend all drink licences throughout the kingdom for the period of the war. The appeal is based on a plea to put the nation at its full strength by removing "a danger which holds back the hour of early victory and throws a shadow over the vision of peace." With the weakening power of alcohol removed, the signatories claim that the national effort against the enemy will gather increased strength. It is not drunkenness alone which endangers the supply of munitions, but, says the memorial, "the constant sapping of men's energies by alcohol." The suspension of the liquor traffic during the war and the conversion of the public-houses into houses of refreshment will, it adds, quicken up the civil and fighting populations, will raise new fire of resolution in the people, and will give to millions the first opportunity they have ever had of breaking old habits of weakness and forming new habits of strength. The appeal is not made by temperance reformers as such, but by thoughtful men in every sphere of business and professional life.

The sapping of men's energies by alcohol is, of course, a medical commonplace, and there cannot remain many people who refuse to endorse the statements in the memorial regarding this danger. If we accept it as critical at the present time we can only picture two classes from whence opposition to the suspension of the traffic will come. First there are some—but we cannot think many—who do not believe that self-control can be strengthened by limitation of temptations to excess. A study of the rapid fall in convictions for drunkenness in nine English cities and towns

since the restrictions imposed by the Central Control Board may help to convince them to the contrary. But those who are financially interested in the production or sale of liquor have in many instances a private code of self-control so strict that it is not easy for them to comprehend the weakness of others. Secondly, there are some who believe that the consumption of alcohol has advantages which compensate for the admitted dangers. For the latter class the case may be stated thus: 'Alcoholic liquids may be taken as food, medicine, or luxury. It is established that about one ounce of absolute alcohol is the limit which can be burned up in the body within a period of 24 hours without paralysing or narcotic effect and without the appearance of unchanged alcohol in the excreta, and one ounce of alcohol supplies about as much fuel as one ounce of margarine—that is, 200 calories. Now one ounce of alcohol, as we pointed out many years ago, costs in the form of cheap spirit 1½d., in the form of beer 3d., in the form of heavy wines 4d. to 6d., in the form of light wines about 1s., and to these prices some 40 per cent. must be added during war-time. One ounce of margarine costs less than ½d. Alcohol in the quantity which can be taken as food is a wasteful food. There is little doubt in the minds of hospital staffs and committees about the value of alcohol as a drug; it has its place, but in the past it was over-estimated. The quantity of alcohol used in treating the sick poor may fairly be taken as a criterion, and a recent example is suggestive. In reply to a Parliamentary question on Oct. 18th last it was pointed out that the cost of alcohol administered to patients at Guy's Hospital had been reduced from £1576 per annum to £151, at Leeds Infirmary from 6s. 6d. per head per annum to 2d., and at Wandsworth Infirmary from 5s. 3d. per head per annum to half a farthing. As a drug, therefore, alcohol is found to-day to have a much restricted application. But we are here leaving out of count its use as an adjunct to digestion, and one of the weak points in the arguments of the strict teetotaler has always been his inability to believe in the existence of such an effect of a small dose of alcohol in a pure and agreeable form. In normal times the claim for the use of alcohol as a luxury cannot be passed over. One of our great thinkers stated the case reasonably when he said that wine used in moderation seems to add to the agreeableness of life, and whatever adds to the agreeableness of life adds to its resources and power. With the major part of our young manhood serving under conditions in which life is the reverse of agreeable, those who remain can hardly be wrong in forgoing this agreeableness as part of their contribution to the cost of the war. If the abstinence produces real ill-effects, then will be the time to fall back upon alcohol—alcohol as a drug.

For the useful employment of alcohol, when prohibited as a beverage, there need be no fear. The memorialists look to the cessation of its manufacture and the utilisation of its raw materials—potatoes and grain—as immediate sources of food-supply. And true it is that there is an inevitable loss of energy in the conversion of these more highly organised bodies into the simpler alcohol:

only some 60 per cent. of the energy in the barley grain or the potato flour remains in the resulting beer or spirit. But if for the present some of the brewing and distilling must go on there are other ways in which ethylic alcohol can be employed. Doubtless a large proportion of the available production is already used directly or indirectly in the manufacture of munitions. But there are a thousand different directions in which alcohol is of service to mankind in the arts and manufactures. It is known that in Germany before the war one-half of the alcohol produced was consumed for various technical purposes. Alcohol is, next to water, the most valuable known solvent, and it has over water the great advantage of a lower boiling point. The shortage of pure alcohol in pharmacy for the preparation of drugs, and in all kinds of laboratory proceedings, is a serious evil, and the high price consequent on the duty which must be paid for its potable employment prejudices its scientific use. Alcohol, if prohibited as a source of mischief or an evidence of luxury to the community, may remain in part as an indirect blessing.

Annotations.

"Ne quid nimis."

UNQUALIFIED TREATMENT OF VENEREAL DISEASES.

SEVERAL correspondents have written urging the necessity of an active campaign for the suppression of the treatment of venereal diseases by unqualified persons. The Royal Commission was very wide-awake to the dangers of the present state of affairs, including the share therein contributed by druggists, herbalists, and advertisement of all sorts. Section 190 of the Report runs, "unqualified practice in these diseases is a disaster, and its existence is a main hindrance to the eradication of venereal disease." But the Commission also realised that the education of the public and the provision of free treatment would tend to diminish the evil of quacks, instancing the fact that in the Army, where instruction and treatment are well given, there is hardly any resort to unqualified practitioners. The Commission therefore concluded that penal measures against unqualified practice would at present prove inoperative, and decided to press forward with the utmost speed the positive measures of systematic free treatment and enlightenment—in short, not to prohibit the sale of inferior goods until a better brand was available. At the same time, in common with the Select Committee on Patent Medicines, the Royal Commission decided that all advertising of venereal nostrums ought to be stopped at once. Lord Sydenham emphasised the need for the suppression of quack advertisements in his presidential address on the work of the National Council and again last week at the Mansion House meeting, and the matter gained at once in importance by a statement made by the President of the Local Government Board later at that meeting. Mr. Long's words were: "Lord Sydenham said he hoped we would deal with the development of quack medicines and the treatment by quack doctors. If public opinion supports

a policy of that kind, and if I can find—which, let me say, I have not yet done—a real working proposal which would have those effects, I shall be ready to do my best to carry it through Parliament." This offer of Mr. Long's should be taken up at once, and no time lost in supplying him with a working proposal for dealing with the advertising of remedies for venereal diseases. All are agreed on the necessity for its prohibition. It should not require any great ability to draw up a simple measure embodying the proposal, which could then come into immediate force. With his wares no longer forced on public attention, the unqualified practitioner would compete to less advantage with the treatment centres. The penalising of the dwindled unqualified practice might then be dealt with at a later time, when the authorised schemes of treatment will have proved themselves efficient.

THE CONSERVATION OF MYDRIATIC DRUGS.

ATROPINE, even of absolute purity, is not a single chemical substance, but is to all intents and purposes an intimate mechanical mixture of right- and left-handed components, these being the isomeric dextro- and lævo-hyoscyamines, which differ greatly in physiological effect. Mr. H. R. Jensen, M.Sc., writes from the laboratory of Messrs. Evans, Sons, Lescher, and Webb, Limited:—

The purest atropines of commerce, of course, contain these constituents in almost precisely equal quantities—the solanaceous plants never—but samples have been examined in this laboratory containing as much as 59.5 per cent. lævo- and 40.5 per cent. dextro-hyoscyamine, which specimens are only undesirable from the standpoint of therapeutic uniformity. With the prevailing scarcity of atropine the advantages of l.-hyoscyamine may be emphasised. The greatest use for this drug is that dependent on its mydriatic property, and Cushny,¹ in exact weight experiments by injection into a cat, demonstrated that 0.045 mgrm. of lævo-hyoscyamine (97.4 per cent. optical activity) had quite the same pupil effect as 0.55 mgrm. of dextro-hyoscyamine, and hence was twelve times the strength of the latter, which makes the lævo- theoretically 1.84 times the mydriatic strength of atropine—he actually observed that 0.025–0.03 mgrm. of lævo-hyoscyamine produced the effects of 0.06–0.0625 mgrm. of atropine. The salivary gland intensity was shown to be of a similar order, and the cardiac effect even greater. But atropine was found to possess greater stimulating power on the spinal cord of the frog owing to the d.-hyoscyamine having a stronger specific strychnine-like action on the cord. Laidlaw² later showed that by using super-pure derivatives of the highest optical activities, the intensity of l.-hyoscyamine could rise to 100 times that of dextro-, and thus one of l.-hyoscyamine would be equivalent to 1.98 of atropine, an increase in strength quite out of proportion to the slight increases in purity, indicating dynamic or other influences resulting in two mixed drugs not giving the mean effect of the constituents.

In view of the fact that raw materials now available at least ensure a supply of l.-hyoscyamine, which can only be transformed into the much less active atropine with both chemical and physiological losses, this aspect may become more important than the actual costs of production. Mr. Jensen states, further, that two large samples of Egyptian henbane (*Hyoscyamus muticus*) were found by him to actually yield at least 83 per cent. of their alkaloids as l.-hyoscyamine of full activity, which content scarcely depreciated in the processes employed for isolation. Specimens of salts prepared therefrom having a specific rotation for the basic ion of -31.7° (i.e., an activity of

¹ Pr. Amer. Physiol. Soc., 1903, 14; J. Physiol., 1904, 30, 176.

² Tr. Chem. Soc., 1909, 95, 1969.

97.3 per cent. lævo-, or similar to Merck's), were found in systematic use by a prominent ophthalmologist to have special advantages, it being concluded that for ordinary clinical use locally, 0.5 per cent. solutions of the salts had an intensity indistinguishable from 2.0 per cent. solutions of atropine sulphate. It may be that in the transient action of drops, rapidity of action is a further factor in so enhancing the intensity. Mr. Jensen concludes—

Solutions kept a month or two showed no appreciable loss of activity, and although auto-racemisation is known to occur in the presence of moisture, apparently an equilibrium or great retardation occurs before this has proceeded far. Finally, the use of l-hyoscyamine, even in 1 per cent. solutions, has so far been unattended by those symptoms of toxicity which frequently accompany atropine. The waste of mydriatic material is obvious, and that it is due not to the restraints imposed by former prices, but perhaps to the conservatism of medicine is shown by the following pre-war values: atropine 1-1.3, l-hyoscyamine (95 per cent.), 1.9; super l-hyoscyamine, 8-12, which latter ultra refinement can be seldom required. The miscalled "amorphous hyoscyamine," which has specific uses, had the value 6. There is no reason why permanent supplies of l-hyoscyamine should not eventually be available to any extent demanded by the medical profession.

In view of the natural variation in the l-hyoscyamine content of belladonna, accentuated by numerous methods of obtaining its galenical preparations, an advance in therapeutics would, no doubt, occur if this drug were controlled not only as to its so-called "atropine" content, but also as to a definite proportion thereof of the much more active l-hyoscyamine.

SUPRARENAL ATHEROMA AND ITS TREATMENT.

SOME experiments have recently been carried out by Dr. Fabio Marabotto, and published in *Annali dell' Istituto Maragliano*, which, although in a preliminary stage, throw light on the pathology of arterio-sclerosis. By making use of an aqueous solution of suprarenal capsule one part to three of physiological salt solution, Dr. Marabotto found that intravenous injections of $\frac{1}{4}$ to $\frac{1}{2}$ c.c. caused marked aortic atheroma in rabbits. On the other hand, no such effect was produced either by subcutaneous injection or oral administration. A second series of experiments were undertaken to investigate the action of a suprarenal toxic serum, when administered simultaneously with suprarenal extract, on the condition of the aorta, in other words to ascertain the behaviour of the animal organism with regard to the production of suprarenal atheroma when under the influence of treatment by suprarenal toxic serum. To obtain this serum, rabbits were inoculated with small repeated quantities of suprarenal emulsion for the space of a month, giving the injections every fourth day. After the last injection the animal experimented on was left quiet for 10 days and then bled. The collected serum, which separated spontaneously, was immediately inactivated by keeping it for half an hour at a temperature of 56° to 58° C., being then sealed in sterilised tubes and kept in ice. Alternate injections of suprarenal extract and the toxic serum, when the latter was given subcutaneously, gave rise to unimportant changes in the aortic coats absolutely not to be compared in their insignificant extent and intensity with those observed in animals subjected exclusively to intravenous administration of suprarenal extract. When under similar circumstances the toxic serum

was administered by the mouth very slight changes in the aorta were noted resembling atheroma, but more extensive and intense than when the serum was given subcutaneously. These results seem to give some indication of the possible benefit of injections of suprarenal toxic serum in the treatment of arterio-sclerosis, and we await with considerable interest the publication of Dr. Marabotto's further researches on the histological aspect of his experiments.

THE EDITH CAVELL HOMES OF REST FOR NURSES.

AN appeal has been issued on behalf of these homes, signed by Sir William Robertson, Lord French, Lady Haig, Lady Jellicoe, and others. As a beginning a freehold house, which would deal with the needs of about 100 nurses yearly, has been offered as a gift at Coombe Head, Haslemere, Surrey, provided that a fund sufficient for its permanent endowment as a suitable home can be raised. Donations should be sent to the honorary secretary, 25, Victoria-street, London, S.W. Messrs. Barclay and Co. are the bankers. We cannot conceive a worthier object for donations. "Of all the many shameful deeds," writes Sir Arthur Conan Doyle, "perpetrated by the Germans in the war, there has been none more cold-blooded, and therefore more odious, than the execution of the saintly woman, Edith Cavell." This feeling is universally held, and can be demonstrated in no more effective way than by subscribing to the foundation of Homes of Rest for Nurses, for the institution of these was the cherished hope of Edith Cavell.

CYANOCUPROL AND TUBERCULOSIS.

IN the August number of the *Journal of Experimental Medicine* some carefully planned experimental and clinical facts have been published by Dr. Gensaburo Koga on the value and effects of a substance called cyanocuprol upon tuberculosis. Both copper and cyanides are known to exert a powerful inhibitory action upon the tubercle bacillus. A compound of the two, however, unless specifically treated, will exert too active a lesional reaction, but a method has been evolved which will permit their bactericidal effects whilst checking too severe a tissue response. The first preparation employed was a specifically prepared solution of potassium cyanide; it was called solution A. Into guinea-pigs, 2 mg. of the human type of the tubercle bacillus were introduced under the skin on the left side of the chest, and observations were made on the duration of life, body weight, and changes in the various organs, especially the growth of the tubercle bacilli. These animals were used as controls and compared with others similarly infected, but which received hypodermic injections of the liquid. Control animals developed extensive tuberculosis, whilst of those treated with liquid A, 15 in number, two lived on in apparent health, five died of intercurrent accidents, one only showed progress in tuberculous lesions, whilst in the remaining seven all pathological changes were arrested. Next, the conjunctiva of the eye was experimentally infected and the same liquid A tested. In the control animal the infection was progressive, whilst in three animals treated with liquid A it was suspended. Liquids A and B (a slight modification of A) were now tested in a similar way in comparison with three other preparations at present regarded with favour as curative agents for tuberculosis—copper chloride, albumin-free tuberculin, and

iodotuberculin. Forty animals were used, ten as control. Liquid A was found to be the most efficient, although it did not completely heal the tuberculous lesions. After other experiments, which led to evolving an even more potent liquid, D, and also established the most suitable method of dosage and administration, this liquid, now called cyanocuprol, was tried in clinical cases. There are, of course, many difficulties in testing clinical effects with accuracy, difficulties not met with under experimental conditions. But as near an approach to accuracy as could reasonably be expected in the series of 63 cases of tuberculosis treated was obtained. Twenty-five cases are claimed as "cured," as shown by gain in body weight, temperature below 37° C., no or nearly no physical signs, bacillus-free sputum where previously bacilli abounded, and the patient being able to do regular work. Of the remainder, 22 improved, three died, and nine were still under treatment. The day after injection physical signs increased, which lessened about the eighth or ninth day. Repeated injections showed diminution of regional phenomena and often final disappearance. The results in five cases of tuberculosis of lymphatic glands were very good. The writer concludes that "the preparation greatly improves or apparently cures pulmonary and surgical tuberculosis in the first and second stages." He obtains beneficial effects in the third stage. The preparation must be given intravenously, though the manner of action is not yet entirely clear. In a paper published in the same issue by Dr. Morisuke Otani, further clinical results are published, this writer concluding that "cyanocuprol is markedly effective in tuberculosis and we believe that it will play an important part in clinical medicine." Both papers bear the mark of careful observation; the results are stated with studious moderation, and further observations will, we hope, be made on similar lines.

THE METROPOLITAN WATER-SUPPLY.

THE condition of the metropolitan water-supply during the month of July was satisfactory. The rainfall was 1.54 inch, being 0.77 of an inch below the average mean rainfall for that month during the previous 33 years. Both bacteriological and chemical examination of the raw waters showed on the whole an improvement, while the filtered waters yielded results better than their respective averages in each case. As regards typical *B. coli*, the filtered waters were practically sterile.

THE NATURE AND TREATMENT OF CARBON MONOXIDE POISONING.

Professor Yandell Henderson, of Yale University, has recently called attention in the *Journal of the American Medical Association* to a prevalent error as to the nature of carbon monoxide poisoning which leads to a corresponding error in treatment. The subject is important, for this gas is responsible for more deaths than all other poisonous gases taken together. The attraction of carbon monoxide for hæmoglobin is 250 times as strong as that of oxygen, but it is wrong to suppose that the resulting combination is permanent or that any lasting deterioration of the oxygen-carrying power of the hæmoglobin is produced. This may be shown by the following experiment. A drop of blood is diluted with water, a drop of very dilute ammonia is added, and the reddish-yellow solution is shaken

with air. One-third of this solution is poured off in a test-tube, while the remaining two-thirds are shaken up with illuminating gas. This portion assumes in a few minutes the cherry-red colour of carbon monoxide hæmoglobin. It is now divided into two parts, one of which is set aside in a third test-tube, while the other is vigorously shaken with air. In a few minutes this sample loses its cherry tint and regains the appearance of the normal blood set aside in the first test-tube. The "mass action" of the oxygen of the air has displaced the carbon monoxide from its combination with hæmoglobin. To all intents and purposes the blood is the same as if it had never been combined with the hæmoglobin. Similarly, when a man poisoned by carbon monoxide is brought into fresh air the combination of his hæmoglobin with the gas immediately begins to break up. The higher the percentage of oxygen in the air inhaled the sooner the gas is displaced. For 15 or 20 minutes after removal from the poisonous atmosphere (but not for more than half an hour) it is beneficial to administer oxygen, pure or with air, by an apparatus which does not allow rebreathing. Even when only air is breathed the mass action of its oxygen is usually sufficient to displace the greater part of the carbon monoxide in an hour or less, so that the oxygen-carrying power of the hæmoglobin is restored sufficiently for the patient's needs. This result is facilitated by the rapid breathing usually developed within half an hour if the patient is not too profoundly asphyxiated. Many never recover consciousness and die a day or two later. The prolonged coma and subsequent death are due to injury to the brain and other organs from insufficient supply of oxygen at the time the patient was breathing the gas. After the parenchymatous degeneration produced no method is known by which the affected tissues can be restored. As far as is known, nature does all that is possible. Authorities, evidently under the view now disproved that the coma is due to retention of carbon monoxide, advocate bleeding, infusion of oxygenated saline solution, and transfusion of blood. Such procedures Professor Henderson considers not only useless but injurious. He refers to the cases of three Filipinos of approximately the same age, weight, and physique overcome by illuminating gas while sleeping in a room. One was treated during the following day by withdrawing blood and injecting oxygenated saline solution, another by transfusion of blood, and the third only by nursing. Only the last recovered. Thus it appears that all that can be done in carbon monoxide poisoning is to perform artificial respiration if natural respiration is feeble or absent, to administer oxygen for half an hour (longer is useless), to keep the patient warm if his temperature has fallen, and to supply water to the system, preferably by Murphy's drip method.

THE Bradshaw Lecture of the Royal College of Surgeons of England will be given by Colonel Charters J. Symonds on Dec. 15th, the subject being "Gunshot Injuries of the Spinal Cord." Surgeon-General Sir G. H. Makins will deliver the Hunterian Oration on Feb. 14th, 1917. An autumn course of lectures for first-aid and ambulance students, by Professor A. Keith, on the Anatomy of the Human Body, is being given every Monday, Wednesday, and Friday during November (up to Nov. 27th), at 5 P.M. A second series is announced for January and February, 1917.

THE TREATMENT OF SEPTIC WOUNDS: CARREL'S STERILISATION METHOD.

AT a special meeting of the Surgical Section of the Royal Society of Medicine on Oct. 31st, with Colonel CHARTERS J. SYMONDS, the vice-president of the section, in the chair, Dr. SHERMAN, of Pittsburg, delivered a lecture on the sterilisation of wounds by the method of Carrel. He pointed out that it had been authoritatively stated that 75 per cent. of the deaths from wounds in war after the first 24 hours were due to sepsis, and that in the case of some wounds the percentage was even higher. He alluded to the various attempts, more or less successful, which have been made from time to time to sterilise septic wounds, and urged the need for the standardisation of the methods. Dr. Carrel, he said, had experimented with some 200 different antiseptics, ultimately deciding that Dakin solution was the best, especially in the modified form devised by Dr. Daufresne. The composition of the solution as now employed was stated to be as follows:

Materials required: Chloride of lime (containing 25 per cent. of active chlorine), 200 gm.; sodium carbonate (dry), 100 gm.; and sodium bicarbonate, 80 gm. The chloride of lime is put into a 12-litre flask with 5 litres of ordinary water, shaken vigorously for a few minutes, and left in contact for from 6-12 hours. At the same time the carbonate and bicarbonate of soda are dissolved in another 5 litres of water. The salt solution is then poured into the flask containing the macerated chloride of lime, and the mixture, after being shaken, is stood to allow the calcium carbonate to be precipitated. After about half-an-hour the liquid is siphoned off and filtered through a double paper to render it clear. It should then be kept in a dark place.

To obtain certain results the exact solution must be employed, and it is especially important that there should be no free caustic alkali, and it must contain not less than 0.45 per cent. and not over 0.5 per cent. of sodium hypochlorite. With less than 0.45 per cent. the fluid is not sufficiently active, and with more than 0.5 per cent. it is irritant. The original Dakin solution was said to contain 0.6 per cent. The action of the solution is most satisfactory if used in the first 24 hours after the infliction of the wound, but it is also of very great value even if employed much later, though necessarily the time taken in sterilisation is longer.

The gist of Dr. Sherman's address is as follows:—

Although the modified Dakin solution is of immense value, Carrel holds that the technique to be employed is of still more importance. The apparatus employed consists of a glass flask, graduated, to contain the Dakin fluid; from this comes a rubber tube, ending in a small glass tube, to which can be attached one or more rubber tubes. Each of these tubes is closed at the end, and in the sides of the tubes many small openings are made about a centimetre apart. The skin of the part is cleansed and painted with solution of iodine, and this is done whether the wound is recent or late. All foreign bodies are removed. The wound is laid open so that all parts of it may be reached, and the rubber tubes are passed into all the recesses of the wound; pieces of gauze are placed lightly round and between the tubes, so as to separate them, and at the same time the gauze will assist in retaining the solution in the wound, but the wound is not to be "packed." The Dakin solution is then allowed to flow from the container into the wound, and passing from the tubes it fills the wound completely. The wound should be refilled with the solution every two hours and re-dressed every day. The effect on the wound is striking. At first the number of microbes present is very great, in fact it may be called infinite; and many polynuclear leucocytes are present. But as the days go by the number of microbes steadily diminishes until very few are present, and when only one bacterium can be found in five ordinary fields of the microscope on five successive days the wound may be regarded as practically sterile, and it will be safe to employ sutures, for no suppuration will ensue, and not even a stitch abscess will develop. The sterility of the wound is strikingly shown by the fact that it is quite safe to plate compound fractures which have been sterilised in this way. If necrosed bone is present in a wound and cannot be removed it will not be possible to sterilise the wound. The method is not applicable to the eye or to the peritoneal cavity; and the solution cannot be injected into veins.

Dr. Sherman gave particulars of many cases in which the method had been employed, and said that the mortality had

been greatly reduced, and that amputations had become very much less frequent. Especially he claimed that the time taken for the complete healing of a wound could in this way be greatly shortened, saying that wounds which otherwise took months to heal healed under his technique in as many weeks. The percentage of failures was small, yet in order to obtain the best results the nurses and the assistants must be carefully trained.

The lecture was illustrated by a large number of lantern slides of photographs, some of which were coloured, and by skiagrams, showing clearly the technique employed and the results obtained.

In the discussion which followed the lecture, Sir W. WATSON CHEYNE said that the illustrations depicted results such as had not been obtained before. The paper coincided with his view that the only likely way to obtain good results was by the use of antiseptics.—Mr. JOCELYN SWAN held that the mechanical effect of the treatment was largely responsible for its success. He thought that the best results followed alternate treatment by hypochlorite and hypertonic salt solution. His experience of the progress of wounds which arrived in England after secondary suture in France was not satisfactory; not infrequently they had to be reopened.—Colonel CHARTERS SYMONDS hesitated to ascribe all the benefit to the hypochlorite solution; many other antiseptics would accomplish the same thing, but the hypochlorite method might be quicker. The results in compound fracture were certainly better than those obtained at base hospitals by other methods. He was satisfied that intermittent was better than continuous application of antiseptics.

CONTROL OF VENEREAL DISEASES.

THE BOROUGH OF PORTSMOUTH, SCHEME.

PORTSMOUTH is to be congratulated on being first in the field with a scheme for the control of venereal diseases, and we understand that the initial difficulties have been got over and only the formal approval of the Local Government Board remains to be obtained. The principal points of the scheme, which has been drawn up by Dr. A. Mearns Fraser, medical officer of health of Portsmouth, on the instruction of his health committee, are as follows:—

(1) The treatment will be carried out at the Royal Hospital under the direction of a specially trained medical officer. As there may be temporary difficulty in getting a full-time officer, it is proposed for the present to appoint Captain A. Campbell, R.A.M.C. (T.), who is doing similar work at the Hulsea Military Hospital. To commence with, the clinique is to be open on three afternoons and evenings a week, female patients being seen from 3.30 to 5 and male patients from 6 to 7.30. Two beds will be provided for each sex. The treatment is to be free to every patient without distinction. The medical officer and staff to be appointed by the Hospital Committee of Management, subject to approval of the Local Government Board.

(2) Laboratory facilities are to be provided at the Royal Hospital available for the medical officer in charge of the treatment centre, for poor-law and other medical officers, and for medical practitioners generally. The need for a properly equipped pathological laboratory has long been felt in Portsmouth. At the present time all pathological material has to be sent to London for examination, and the provision of a competent pathologist on the spot would give the much-needed opportunity for direct consultation between the medical man and the pathologist. For the present the part-time services of Captain J. A. D. Radcliffe, R.A.M.C., could probably be obtained.

(3) Salvarsan or its substitute is to be issued free to medical practitioners by the medical officer of the treatment centre and by the medical officer of health.

(4) Apparatus for collecting material for examination from suspects is to be obtainable free of charge by medical practitioners on application either at the town-hall or at the treatment centre.

(5) A committee is to be formed, including representatives from the various public bodies and voluntary agencies, to advise the council in regard to measures for disseminating information as to the scheme as well as for the control of venereal diseases. The suggestion is made that the local medical committee should appoint representatives to assist the committee in addition to the three medical men now serving on the health committee.

Emphasis is laid on the intention to observe the strictest confidence in regard to persons attending the treatment centre. Their names and addresses will be required by the

medical officer solely for the purpose of communication with them in connexion with their treatment, and under no circumstances to be divulged to any third person.

Dr. Mearns Fraser has made a provisional estimate of the cost of such a scheme for the first year. Portsmouth has over a quarter of a million inhabitants, and is, to boot, an important naval and military centre. The provision must therefore be adequate. The expenses come under two heads: (1) the adaptation of suitable premises at the Royal Hospital, together with the necessary instalment of apparatus and instruments; and (2) the annual maintenance. The Royal Hospital authorities did not propose to make any profit out of the scheme, and the following estimate is considered to be the outside cost of treatment:—

1. Adaptation of premises, £17; purchase of instruments, £60; total, £77.
2. Maintenance for one year, £40; laundry and cleaning, £50; fuel, heat, and lighting, £5; domestic, £40; general administrative charges, £100; total, £235.
3. Payment of medical officer at rate of 10s. per hour, not exceeding £25 per month, £300.
4. Nurses and orderly, £250.
5. Drugs, including salvarsan issued to practitioners, £200.
6. In-patients' board, £30.
7. Cost of pathological laboratory facilities, fitting of room, water, gas, &c., £50; appliances and instruments, £120; total, £170.
8. Payments for pathological reports at rates to be agreed upon, minimum 100, £150.
9. General: Apparatus for collecting material, printing, post, literature, lectures, &c., £50.

Grand total, £1462.

Of this expenditure, as Dr. Mearns Fraser points out, the council will only bear 25 per cent., the Local Government Board being responsible for the remaining 75 per cent. Notwithstanding the claims of economy at the present moment, he advises the council to undertake the additional £300 a year without hesitation.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

MEETING OF COMITIA.

A COMITIA was held on Oct. 26th, Dr. FREDERICK TAYLOR, the President, being in the chair.

The following candidates having passed the required examination were admitted Members of the College: Edgar Douglas Adrian, M.B. Camb.; James Froude Flashman, M.D. Sydney; and Charles Putnam Symonds, L.R.C.P.

Licences to practise physic were granted to 89 candidates who had passed the necessary examinations.

A letter was received from Dr. W. Pasteur resigning the office of censor owing to his proceeding to France on active service. Dr. Sidney Phillips was elected a censor.

The following resolutions were passed:—

1. That in the opinion of this College administrative measures for the diagnosis and treatment of venereal diseases will only attain their maximum effectiveness in protecting the public health when the treatment of such diseases by unqualified persons is prevented by law.
2. That it is desirable that the recommendations 58 (iii.) of the Patent Medicines Committee of the House of Commons, endorsed by the Royal Commission on Venereal Diseases, should at once be carried into effect.
3. That a copy of the above resolutions be sent to the Prime Minister, to the Home Secretary, and to the President of the Local Government Board.

The President was re-elected a member of the Committee of Management.

The PRESIDENT drew the attention of the College to the fact that the 400th anniversary of the foundation of the College will occur in 1918.

A report dated Oct. 3rd was received from the Committee of Management which announced: (1) That the Grammar School, Ilkley, had been added to the list of institutions recognised by the Examining Board in England for instruction in chemistry and physics; (2) that the University of Allahabad had been added to the list of Universities recognised by the Examining Board in England, and that graduates in medicine of the University be admissible to the Final Examination of the Board under the conditions of Paragraph IV., Section III., of the Regulations.

After some further formal business the PRESIDENT dissolved the Comitia.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeons: G. E. Burton, S. N. Scott, J. E. Phillips, S. R. Johnston, A. H. Flannery, and J. R. B. Robb.

The following appointment has been made:—Temporary Surgeon: D. J. Max to *Vivid*.

ARMY MEDICAL SERVICE.

Temporary Colonel H. M. Rigby (Captain, R.A.M.C., T.F.), having resigned his appointment as Consulting Surgeon, relinquishes his temporary commission.

ROYAL ARMY MEDICAL CORPS.

Temporary Lieutenant-Colonel E. A. Hanly relinquishes his commission on account of ill-health.

Majors C.A.M.C. to be Temporary Lieutenant-Colonels: A. B. Osborne and C. H. Gilmour.

Temporary Captain A. C. Renwick relinquishes his commission.

Captains C.A.M.C. to be temporary Majors: G. P. Howlett and H. Smith.

To be temporary Captains: Lieutenant A. D. Dias, C.A.M.C., and Hon. Major C. J. Stewart, C.A.M.C.

SPECIAL RESERVE OF OFFICERS.

Supplementary to Regular Corps or Units.

Lieutenants to be Captains: J. F. W. Meenan, D. H. Paterson, G. Irving, C. A. Whittingham, G. C. L. Woodroffe. A. L. V. Davin to be Lieutenant.

TERRITORIAL FORCE.

London Mounted Brigade Field Ambulance: Captain T. H. Chittenden to be temporary Major.

West Lancs. Field Ambulance: N. J. Allan to be Lieutenant.

London Sanitary Company: Lieutenant L. Griffiths to be Captain.

TERRITORIAL FORCE RESERVE.

Captain K. S. Storrs and Captain B. N. Ash, from Attached to Units other than Medical Units, to be Captain.

SOCIETY OF MEMBERS OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The annual general meeting of the Fellows and Members will take place at the College, Lincoln's Inn-fields, W.C., on Thursday, Nov. 16th, at 3 P.M. The following resolutions have been sent in on behalf of the Society:—

1. That this Thirty-second Annual Meeting of Fellows and Members again affirms the desirability of admitting Members to direct representation on the Council of the College, which as now constituted only represents those Members who also hold the Fellowship; and that it does so in order that the constitution of the Council of the Royal College of Surgeons of England shall be in keeping with modern ideas of true representation.
2. That as the Royal College of Surgeons is composed of about 19,000 persons, of whom nearly 18,000 are engaged in general practice, this annual meeting requests the President and Council to nominate at least two Members and (or) two Fellows in general practice to represent the interests of general practitioners in the management of College affairs.
3. That the President is hereby invited to make a statement to this meeting on the subject of the above resolution.

ANNUAL REPORT OF COUNTY MEDICAL OFFICER FOR ABERDEEN.—The report for the year 1915 of Dr. J. P. Watt, county medical officer for Aberdeen, shows a birth-rate of 23.4 per 1000 for the year, as compared with 24.1 in 1914 and an average of 24.5 for the preceding five years. The percentage of illegitimate births was 16.3, as compared with 17.0 for 1914, 18.2 for 1913, and 19.3 for 1912. The marriage-rate was 3.7 per 1000, the same as for 1914. The excess of birth- over death-rate was 9.3 per cent. The death-rate of children under 1 year was 87.8 per 1000 births, as compared with 74 per 1000 in 1914. The number of deaths from all forms of tuberculosis was 112, compared with 97 in 1914. Scarlet fever was again prevalent, though less so than in 1913, the rise being coincident with an epidemic in the city of Aberdeen, where scarlet fever reached the highest level since 1896. In the county 1913 saw the highest level of the recent wave, with an incidence of 625 cases per 100,000, as compared with 350 in 1914, and 433 in 1915. During the 23 years from 1892 to 1915, the average annual number of cases for the county was 339 per 100,000, and for the city 531 per 100,000. The case mortality was 5.2, as compared with 2.8 for 1914 and an average of 2.2 for the five preceding years, the type of the disease both in the city and in the county during the year 1915 being unusually severe.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census 7691 births and 4268 deaths were registered during the week ended Saturday, Oct. 28th. The annual rate of mortality in these towns, which had declined from 13.5 to 11.8 per 1000 in the four preceding weeks, rose in the week under notice to 12.9 per 1000 of their aggregate civil population estimated at 17,312,295 persons for the year 1915. During the first four weeks of the current quarter the mean annual death-rate in these towns averaged 12.4, against 12.0 per 1000 in London. Among the several towns the death-rate last week ranged from 4.1 in Southend-on-Sea, 6.9 in East Ham, 7.0 in Hornsey, 7.2 in Acton, and 7.4 in Wimbledon, to 18.1 in Bury, 18.6 in Great Yarmouth and in Gateshead, 18.7 in Middlesbrough, and 18.8 in Bournemouth.

The 4268 deaths from all causes were 349 above the number in the previous week, and included 316 which were referred to the principal epidemic diseases, against numbers declining from 594 to 306 in the six preceding weeks. Of these 316 deaths, 221 resulted from infantile diarrhoeal diseases, 53 from diphtheria, 13 each from measles and whooping-cough, 11 from enteric fever, and 5 from scarlet fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1.0, against 0.9 per 1000 in the previous week. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had steadily declined from 477 to 221 in the six preceding weeks, were again 221 last week, and included 51 in London, 28 in Liverpool, 11 in Manchester, 10 in Birmingham, and 6 each in Stoke-on-Trent and Hull. The deaths referred to diphtheria, which had been 52, 45, and 40 in the three preceding weeks, rose to 53, of which 13 were registered in London, 4 each in Stoke-on-Trent and Birmingham, and 3 each in Liverpool and Middlesbrough. The fatal cases of measles, which had been 25, 21, and 17 in the three preceding weeks, further fell to 13, and included 5 in London and 2 each in Liverpool and Manchester. The deaths referred to whooping-cough, which had been 15, 23, and 10 in the three preceding weeks, rose to 13, and included 2 each in London, Stoke-on-Trent, and Manchester. The 11 deaths attributed to enteric fever were equal to the average in the three preceding weeks, and included 2 each in London, Manchester, and Hull. The fatal cases of scarlet fever, which had been 13, 9, and 7 in the three preceding weeks, further declined to 5, of which 3 occurred in London.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 1037, 1074, and 1067 at the end of the three preceding weeks, rose to 1130 on Saturday last; 197 new cases were admitted during the week, against 159, 167, and 125 in the three preceding weeks. The number of cases of diphtheria, which had increased from 1262 to 1429 in the six preceding weeks, further rose to 1490; 231 new cases were admitted during the week, against 228, 194, and 188 in the three previous weeks. These hospitals also contained on Saturday last 56 cases of measles, 47 of whooping-cough, and 40 of enteric fever, but not one of small-pox. The 1053 deaths from all causes in London were 93 above the number recorded in the previous week, and corresponded to an annual rate of 12.7 per 1000. The deaths referred to diseases of the respiratory system, which had been 132 in each of the two preceding weeks, rose to 142 in the week under notice.

Of the 4268 deaths from all causes in the 96 towns, 158 resulted from violence, 362 were the subject of coroners' inquests, and 1308 occurred in public institutions. The causes of 34, or 0.8 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London and in 13 of its 14 suburban districts, in Sheffield, Leeds, Bristol, Bradford, and in 60 other smaller towns. Of the 34 uncertified causes, 8 were registered in Liverpool, 4 in Manchester, 3 each in Birmingham and Gateshead, and 2 each in South Shields and Tynemouth.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year 993 births and 587 deaths were registered during the week ended Saturday, Oct. 28th. The annual rate of mortality in these towns, which had been 15.1, 13.6, and 13.0 per 1000 in the three preceding weeks, fell to 12.9 per 1000 in the week under notice. During the first four weeks of the current quarter the mean annual death-rate averaged 13.7, against a corresponding rate of 12.4 per 1000 in the large English towns. Among the several towns the death-rate last week ranged from 3.1 in Ayr, 7.7 in Falkirk, and 8.3 in Leith, to 16.8 in Kilmarnock, 17.0 in Aberdeen, and 18.7 in Hamilton.

The 587 deaths from all causes were 2 below the number in the previous week, and included 53 which were referred to the principal epidemic diseases, against numbers declining from 92 to 53 in the three preceding weeks. Of these 53 deaths, 19 resulted from infantile diarrhoeal diseases, 18 from measles, 5 from scarlet fever, 4 each from enteric fever and diphtheria, and 3 from whooping-cough, but not one from small-pox. The death-rate from these diseases was equal to 1.2, against 1.0 per 1000 in the large English towns. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had been 66, 30, and 29 in the three preceding weeks, further fell to 19, and included 9 in Glasgow, and 2 each in Edinburgh, Dundee, and Clydebank. The deaths referred to measles, which had been 8, 16, and 2 in the three preceding weeks, rose to 18, and comprised 13 in Dundee and 5 in Glasgow. The fatal cases of scarlet fever, which had been 7, 7, and 3 in the three preceding weeks, rose to 5, of which 2 occurred in Glasgow. The 4 deaths from enteric fever, which comprised 3 in Kilmarnock and 1 in Greenock, were slightly in excess of the average in recent weeks. The deaths attributed to diphtheria, which had been 5, 4, and 12 in the three preceding weeks, fell to 4, but showed no excess in any particular town. The 3 fatal cases of whooping-cough were recorded in Glasgow, Dundee, and Aberdeen respectively.

The deaths referred to diseases of the respiratory system, which had been 94, 90, and 74 in the three preceding weeks, rose to 87 in the week under notice, but were 71 below the number registered in the corresponding week of last year. The deaths from violence numbered 30, against 17 and 26 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the registration area of Dublin 179 births and 142 deaths were registered during the week ended Saturday, Oct. 28th. The annual rate of mortality, which had been 18.7, 17.7, and 17.5 per 1000 in the three preceding weeks, rose to 18.7 in the week under notice, against 12.7 and 11.8 per 1000 in London and Glasgow respectively.

The 142 deaths from all causes included 35 of infants under 1 year and 40 of persons aged 65 years and upwards. Eleven deaths (of infants under 2 years) were referred to diarrhoeal diseases, and 1 each to enteric fever, scarlet fever, and whooping-cough. The causes of 5 deaths were uncertified, and those of 4 others were the subject of coroners' inquests, while 48, or 34 per cent., of the total deaths occurred in public institutions.

During the same period 167 births and 118 deaths were registered in the city of Belfast. The deaths corresponded to an annual rate of 15.8, or 2.7 per 1000 above that recorded in the previous week, and included 24 of infants under 1 year and 21 of persons aged 65 years and upwards. Seven deaths were referred to infantile diarrhoea and 2 each to scarlet fever and whooping-cough. The causes of 2 deaths were uncertified, and those of 4 others were the subject of coroners' inquests, while 25 of the total deaths occurred in public institutions.

VITAL STATISTICS OF LONDON DURING SEPTEMBER, 1916.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the 10 diseases specified in the table was equal to an annual rate of 4.9 per 1000 of the civil population, estimated at 4,310,030 persons in the middle of the year; in the three preceding months the rates had been 4.8, 4.9, and 4.0 per 1000 respectively. The lowest rates for September were recorded in Kensington, Hammer-smith, the City of Westminster, St. Marylebone, Finsbury, and Lewisham; and the highest rates in the City of London, Shoreditch, Bethnal Green, Stepney, Southwark, and Deptford. The prevalence of scarlet fever showed a considerable increase over that recorded in the preceding month; among the several boroughs this disease was proportionally most prevalent in Paddington, the City of London, Bethnal Green, Stepney, and Poplar. The Metropolitan Asylums Hospitals contained 1007 scarlet fever patients at the end of September, against 1256, 1201, and 991 at the end of the three preceding months; the weekly admissions averaged 143, against 163 and 120 in the two preceding months. Diphtheria also was much more prevalent in September than it had been in August; the greatest proportional prevalence of this disease was recorded in Holborn, the City of London, Shoreditch, Bethnal Green, Stepney, and Southwark. There were 1287 diphtheria patients under treatment in the Metropolitan Asylums Hospitals at the end of September, against 1280 and 1236 at the end of the two preceding months; the weekly admissions averaged 167, against 153 and 135 at the end of the two preceding months. The prevalence of enteric fever showed a slight rise; of the 43 cases notified during

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING SEPTEMBER, 1916.
(Specially compiled for THE LANCET.)

| CITIES AND BOROUGH. | Estimated civil population, 1915. | NOTIFIED CASES OF INFECTIOUS DISEASE. | | | | | | | | | | DEATHS FROM PRINCIPAL INFECTIOUS DISEASES. | | | | | | | | | | Deaths from all causes. | Death-rate per 1000 living. | |
|---------------------------|-----------------------------------|---------------------------------------|----------------|--------------|---------------|----------------|-------------------------|------------------|-------------|----------------------------|----------------|--|--------------------------------------|------------|----------|----------------|--------------|-----------------|----------------|--|--------|-------------------------|-----------------------------|--------------------------------------|
| | | Small-pox. | Scarlet fever. | Diphtheria.* | Typhus fever. | Enteric fever. | Other continued fevers. | Puerperal fever. | Erysipelas. | Cerebro-spinal meningitis. | Poliomyelitis. | Total. | Annual rate per 1000 persons living. | Small-pox. | Measles. | Scarlet fever. | Diphtheria.* | Whooping-cough. | Enteric fever. | Diarrhoea and enteritis (under 2 years). | Total. | | | Annual rate per 1000 persons living. |
| LONDON... .. | 4,310,030 | — | 590 | 705 | — | 43 | 1 | 17 | 197 | 16 | 45 | 1614 | 4.9 | — | 43 | 3 | 26 | 16 | 6 | 386 | 480 | 1.5 | 3980 | 12.0 |
| <i>West Districts.</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| Paddington | 131,397 | — | 28 | 13 | — | 1 | — | 1 | 4 | — | 2 | 49 | 4.9 | — | — | — | — | 1 | — | 7 | 8 | 0.8 | 96 | 9.5 |
| Kensington | 155,795 | — | 11 | 13 | — | — | — | — | 9 | — | 1 | 34 | 2.8 | — | — | — | — | — | — | 5 | 5 | 0.4 | 127 | 10.6 |
| Hammersmith | 118,559 | — | 8 | 12 | — | — | — | — | 4 | — | — | 24 | 2.6 | — | — | — | 1 | — | — | 4 | 5 | 0.5 | 92 | 10.1 |
| Fulham | 151,161 | — | 15 | 21 | — | — | — | 1 | 5 | 1 | — | 43 | 3.7 | — | 1 | — | 2 | — | 16 | 20 | 1.7 | 134 | 11.6 | |
| Chelsea | 58,421 | — | 7 | 6 | — | 1 | — | — | 4 | — | — | 18 | 4.0 | — | — | — | 1 | — | 2 | 3 | 0.7 | 63 | 14.1 | |
| City of Westminster ... | 135,104 | — | 8 | 12 | — | 3 | — | — | 2 | — | — | 25 | 2.4 | — | — | — | — | — | 6 | 6 | 0.6 | 124 | 12.0 | |
| <i>North Districts.</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| St. Marylebone | 100,260 | — | 5 | 10 | — | 2 | — | — | 3 | 1 | — | 21 | 2.7 | — | — | — | — | 1 | 1 | 2 | 0.3 | 88 | 11.4 | |
| Hampstead | 81,769 | — | 9 | 10 | — | 3 | — | — | 1 | — | — | 23 | 3.7 | — | — | — | — | — | 11 | 18 | 1.2 | 49 | 7.8 | |
| St. Pancras | 209,322 | — | 24 | 36 | — | 3 | — | 1 | 5 | 1 | 2 | 72 | 4.7 | — | 6 | — | 1 | — | 11 | 18 | 1.2 | 194 | 12.6 | |
| Islington | 316,242 | — | 43 | 46 | — | 4 | — | — | 20 | — | 3 | 116 | 4.8 | — | 1 | — | 2 | — | 19 | 22 | 0.9 | 281 | 11.6 | |
| Stoke Newington... .. | 50,527 | — | 5 | 12 | — | 1 | — | — | — | — | 1 | 19 | 4.9 | — | — | — | — | — | 4 | 4 | 1.0 | 40 | 10.3 | |
| Hackney | 217,883 | — | 24 | 26 | — | 2 | — | 2 | 9 | 1 | 1 | 65 | 3.9 | — | 2 | — | 1 | — | 22 | 25 | 1.5 | 177 | 10.6 | |
| <i>Central Districts.</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| Holborn | 40,405 | — | 2 | 10 | — | — | — | — | — | — | 1 | 13 | 4.2 | — | — | — | 1 | — | 1 | 2 | 0.6 | 38 | 12.3 | |
| Finsbury | 76,915 | — | 12 | 4 | — | — | — | — | 3 | — | 1 | 20 | 3.4 | — | — | — | — | — | 5 | 5 | 0.8 | 82 | 13.9 | |
| City of London | 19,461 | — | 7 | 9 | — | — | — | — | — | — | — | 16 | 10.7 | — | — | — | — | — | — | — | — | 10 | 6.7 | |
| <i>East Districts.</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| Shoreditch | 103,627 | — | 17 | 25 | — | 1 | — | — | 15 | — | 2 | 60 | 7.5 | — | 1 | 2 | 1 | — | 1 | 20 | 25 | 3.1 | 101 | 12.7 |
| Bethnal Green | 120,207 | — | 33 | 33 | — | 1 | — | — | 19 | 1 | 2 | 89 | 9.7 | — | — | — | 2 | 1 | 1 | 23 | 27 | 2.9 | 108 | 11.7 |
| Stepney | 265,731 | — | 53 | 98 | — | 1 | — | 1 | 19 | — | 2 | 174 | 8.5 | — | 4 | 1 | 3 | 1 | 1 | 28 | 38 | 1.9 | 254 | 12.5 |
| Poplar | 156,247 | — | 31 | 21 | — | 4 | — | 1 | 8 | 2 | 5 | 72 | 6.0 | — | 3 | — | 1 | 1 | 1 | 35 | 41 | 3.4 | 199 | 16.6 |
| <i>South Districts.</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| Southwark | 179,424 | — | 25 | 46 | — | 1 | — | 3 | 12 | — | 3 | 90 | 6.5 | — | 7 | — | 2 | 2 | — | 24 | 35 | 2.5 | 190 | 13.8 |
| Bermondsey | 117,188 | — | 11 | 17 | — | 1 | — | — | 1 | 2 | 6 | 38 | 4.2 | — | 4 | — | — | 1 | 1 | 11 | 17 | 1.9 | 144 | 16.0 |
| Lambeth | 284,188 | — | 52 | 38 | — | 1 | — | — | 7 | 3 | 5 | 106 | 4.9 | — | 6 | — | 2 | 1 | — | 26 | 35 | 1.6 | 296 | 13.6 |
| Battersea | 161,945 | — | 21 | 24 | — | 4 | — | 2 | 6 | — | 2 | 59 | 4.7 | — | 1 | — | 1 | 1 | 16 | 19 | 1.5 | 142 | 11.4 | |
| Wandsworth | 312,249 | — | 39 | 27 | — | 5 | 1 | 2 | 11 | 1 | 1 | 87 | 3.6 | — | 2 | — | — | 1 | — | 22 | 25 | 1.0 | 249 | 10.4 |
| Camberwell | 254,385 | — | 39 | 51 | — | 1 | — | — | 8 | 1 | 5 | 105 | 5.4 | — | 3 | — | 4 | — | 24 | 31 | 1.6 | 254 | 13.0 | |
| Deptford | 110,299 | — | 21 | 23 | — | — | — | 1 | 11 | — | — | 56 | 6.6 | — | 1 | — | — | — | 19 | 20 | 2.4 | 114 | 13.5 | |
| Greenwich | 96,385 | — | 6 | 24 | — | 1 | — | — | 2 | 2 | — | 35 | 4.7 | — | — | — | — | — | 9 | 9 | 1.2 | 85 | 11.6 | |
| Lewisham | 164,438 | — | 18 | 17 | — | 2 | — | — | 2 | — | — | 39 | 3.1 | — | — | — | 2 | 1 | 17 | 20 | 1.6 | 146 | 11.6 | |
| Woolwich | 129,505 | — | 16 | 21 | — | — | — | 2 | 7 | — | — | 46 | 4.6 | — | 1 | — | — | 3 | — | 9 | 13 | 1.3 | 102 | 10.3 |
| Port of London | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

* Including membranous croup.

the four weeks ending Sept. 30th, 5 belonged to Camberwell, 4 each to Islington, Poplar, and Battersea, and 3 each to the City of Westminster, Hampstead, and St. Pancras. The Metropolitan Asylums Hospitals contained 35 enteric fever patients at the end of September, against 44, 40, and 35 at the end of the three preceding months; the weekly admissions averaged 7, against 5 in each of the two preceding months. Erysipelas was proportionately most prevalent in the City of Westminster, Shoreditch, Bethnal Green, Stepney, Southwark, and Deptford. The 17 cases of puerperal fever notified during the month included 3 in Southwark, and 2 each in Hackney, Battersea, Wandsworth, and Woolwich. The 16 cases of cerebro-spinal meningitis included 3 in Lambeth and 2 each in Poplar, Bermondsey, and Greenwich; and of the 45 cases of poliomyelitis, 6 belonged to Bermondsey, 5 to Poplar, 5 to Lambeth, 5 to Camberwell, 3 to Islington, and 3 to Southwark.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several metropolitan boroughs, the deaths occurring in institutions having been distributed among the several boroughs in which the deceased persons had previously resided. During the four weeks ending Sept. 30th the deaths of 3980 London residents were registered, equal to an annual rate of 12.0 per 1000, against 11.5, 10.7, and 10.6 per 1000 in the three preceding months. The death-rates for September ranged from 6.7 in the City of London, 7.8 in Hampstead, 9.5 in Paddington, 10.1 in Hammersmith, and 10.3 in Stoke Newington and in Woolwich, to 13.5 in Deptford, 13.6 in Lambeth, 13.8 in Shoreditch, 13.9 in Finsbury, 14.1 in Chelsea, 16.0 in Bermondsey, and 16.6 in Poplar. The 3980 deaths from all causes included 480 which were referred to the principal infectious diseases; of these, 43 resulted from measles, 3 from scarlet fever, 26 from diphtheria, 16 from whooping-cough, 6 from enteric fever, and 386 from diarrhoea and enteritis among children under 2 years of age. No death from any of these diseases was recorded during September in the City of London or in Hampstead; among the other boroughs they caused the lowest death-rates in Kensington, Hammersmith, the

City of Westminster, St. Marylebone, and Holborn; and the highest rates in Shoreditch, Bethnal Green, Poplar, Southwark, and Deptford. The 43 deaths from measles were slightly less than the corrected average number in the corresponding period of the five preceding years; of these 43 deaths, 7 belonged to Southwark, 6 to St. Pancras, 6 to Lambeth, 4 to Stepney, 4 to Bermondsey, 3 to Poplar, and 3 to Camberwell. The 3 fatal cases of scarlet fever were 12 below the corrected average number; 2 belonged to Shoreditch and 1 to Stepney. The 26 deaths from diphtheria were 19 below the corrected average number, and included 4 in Camberwell, 3 in Stepney, and 2 each in Islington, Bethnal Green, Southwark, Lambeth, and Lewisham. The 16 fatal cases of whooping-cough were 34 less than the corrected average number; of these 16 deaths 3 belonged to Woolwich and 2 each to Fulham and Southwark. The 6 deaths from enteric fever were 8 below the corrected average, and belonged respectively to St. Marylebone, Shoreditch, Bethnal Green, Stepney, Poplar, and Bermondsey. The deaths from diarrhoea and enteritis among children under 2 years of age were 455 below the corrected average number; the greatest proportional mortality from this cause was recorded in Shoreditch, Bethnal Green, Poplar, Southwark, and Deptford. In conclusion, it may be stated that the aggregate mortality in London during September from these principal infectious diseases was 49.5 per cent. below the average.

MEMORIAL TO SIR HENRY SWANZY.—The Archbishop of Dublin unveiled recently a memorial which has been erected to Sir Henry Swanzy in the Royal Victoria Eye and Ear Hospital, Dublin. Shortly after Sir Henry Swanzy's death a public appeal for subscriptions to a memorial in his memory was issued and nearly £1500 were received. This sum has been devoted to the completion of a wing of the Royal Victoria Hospital, in the foundation of which Swanzy had been active. The personal memorial which was unveiled last week is a bronze bas-relief portrait by Mr. Oliver Sheppard, R.H.A.

Correspondence.

"Audi alteram partem."

THE DIFFERENTIATION OF HEART MURMURS IN SOLDIERS.

To the Editor of THE LANCET.

SIR,—Amongst the many problems in connexion with war illness presented for solution, few are more interesting and more difficult than the distinction between organic valvular defects and their counterpart, or mimicry, occurring in the course of functional heart derangement. The importance of a correct diagnosis can scarcely be over-estimated, and the difficulties the problem presents may be gauged by the fact that a large number of cases have reached the hospitals in this country with the diagnosis of V.D.H. (valvular disease of the heart), which long and careful observation and suitable treatment have proved to be functional. In the majority of these cases the diagnosis was presumably based upon the existence of a murmur, though no doubt other signs and symptoms were also taken into consideration.

The cause and detection of functional heart murmurs has interested me for many years, and my connexion with the Northumberland War Hospital has afforded me considerable fresh opportunity of investigating the subject as well as the nature of the so-called "soldier's heart" generally. But my object in writing this letter is to call attention to a method by which I believe functional murmurs can, as a rule, be distinguished from organic. I may say that in my experience a systolic bruit can be detected in the great majority of cases of functional derangement of the heart arising in some way out of war conditions, whether from strain, shell-shock, or other nervous causes. It is true these murmurs are not always present; at times they stop and remain absent for hours; they may be audible when lying and not when standing, or *vice versa*; they may diminish even to vanishing-point under examination; but frequent examinations will nearly always lead to their detection, and they are usually best heard towards the right of the apex, and especially when the patient is lying on his left side. They are not well conducted beyond the apex, and often cease when the patient draws and holds a long breath. The chief point, however, to which I wish to draw attention is the fact, which I regard as almost conclusive, that the functional apical murmur will at once become inaudible when the fingers of the observer holding the bell-piece of the binaural stethoscope press in the ribs upon the heart as the patient lies on his left side. It is well when examining the case to stand on the right side of the bed and stoop over the patient, and in this way the fingers of both hands can be employed to press in the ribs and interspace auscultated upon the heart; or the observer may be on the left side of the patient and an assistant directed to make the necessary pressure. In the case of organic murmurs—e.g., those of mitral regurgitation—the firmest pressure fails to render the bruit inaudible, and may intensify it.

I may mention incidentally that I have noticed whilst investigating heart murmurs in this way that pressure considerably modifies the presystolic bruit of mitral stenosis, for as the chest wall is being pressed in upon the apex the murmur becomes shortened and loses some of its rough character. It would seem that firm pressure renders inaudible sounds which are really due to chest-wall vibrations, and are therefore exocardiic in origin.

I am, Sir, yours faithfully,

Newcastle-on-Tyne, Oct. 24th, 1916. DAVID DRUMMOND.

THE MANUFACTURE OF SALVARSAN PRODUCTS IN ENGLAND.

To the Editor of THE LANCET.

SIR,—Major Ernest Lane has drawn renewed attention in THE LANCET of Sept. 30th to his unfortunate experiences with kharsivan. We feel that it would be unfair to the firm of chemists which was so enterprising as to place this substance at the disposal of British medical men so soon after the beginning of the war if we were not to state our own experience, which has been very much more favourable than his.

We have used about 1400 doses of kharsivan and neo-kharsivan (nearly all the former), the injections having been given by one of us or under our supervision. In military cases we have followed the new Army regulations for the treatment of syphilis, and in civil and private practice we have usually given the full dose of 0.6 gramme to adult males and females alike. Our experience has been the same. We have seen no symptom which could possibly be considered as being due to arsenical poisoning, no rashes, no violent reactions, and, in short, nothing which could give either of us a single moment's uneasiness as to any of our patients. In most cases there are no symptoms of any sort, but in early syphilis there is usually a slight temperature reaction, rarely exceeding 100° F., but this almost always subsides in a few hours. There is often some slight gastric disturbance; anything more than this can usually be traced to a surreptitious meal before or after the injection. Often there is a sharp movement of the bowels, rarely diarrhoea. No patient has been kept in bed for more than one night owing to the severity of the symptoms.

Most of our patients have been young and otherwise healthy men, but in the civil practice of King's College Hospital and in private there have been numerous injections in older men and in females of all ages. One of us injected a man 70 years of age, who suffered from severe cystitis due to B.coli, without any unpleasant results. We make a routine examination of the urine in all cases, and regard even a slight trace of albumin, if probably of renal origin, as a contraindication. So far we have met with no other. In all cases the patients are prepared as for an operation, being given an aperient the previous night and kept in bed for about four hours without food before the injection. They stay in bed for the rest of the day, and are only given light food. We use water that has been distilled in the laboratories of the hospital under the supervision of one of us and autoclaved immediately afterwards. We take care that the vessel containing it is not opened, even momentarily, after sterilisation until it is required for use. We dissolve the drug in water which is nearly cold, and add about five or six drops of 15 per cent. caustic soda beyond the point required for complete re-solution of the precipitate. We never use a solution which has been prepared for more than half an hour, and prefer to use it as soon as it has been prepared.

We are, Sir, yours faithfully,

W. D'ESTE EMERY,
Captain, R.A.M.C. (T.).
JOHN EVERIDGE,
Captain, R.A.M.C. (T.).

Harley-street, W., Oct. 31st, 1916.

ENTEROCOCCUS IN THE URINE OF CONVALESCENT SOLDIERS.

To the Editor of THE LANCET.

SIR,—In an important paper in your issue of Oct. 7th attention is called by Major T. Houston and Captain J. M. McCloy to the importance of the enterococcus in "trench fever" and allied conditions. Certain observations made by us in the routine examination of the urine of soldiers convalescent from enteric fever, paratyphoid fever, and dysentery led us to the conclusion that military service abroad and perhaps the occurrence of lesions in the intestine were often followed by the invasion of the system by enterococci and by their excretion in the urine. In fact, urinary "enterococcic carriers" are very commonly met with among soldiers at command depôts and convalescent camps. Many of these "carriers" suffered from vague articular and myalgic pains, others had no symptoms whatever.

We find on consulting our records that in one series of 162 specimens examined 22 were found to contain enterococci. A number of these strains were tested as to their fermentative reactions, and we found that there was considerable variation among the individual strains, some having the characters of what we usually term in this country streptococcus faecalis, and as such generally fermenting mannite, others fermented glucose, lactose, and saccharose, but not mannite, whilst some had no action on any sugar, and in this respect corresponded with the description given by French bacteriologists, such as Macé, to the enterococcus. French writers¹ have recently shown that frequently the

¹ Sartory, Lasseur et Spillmann: Diplocoque dans le Sang des Suspects de Typhoïde. *Compt. R. de la Soc. de Biolog.*, vol. lxxviii., p. 257 (1915), and Burges, Lancellin et Joly in *Compt. R. de la Soc. de Biolog.*, vol. lxxviii., p. 632. Also Lebrun et Portier, *ibidem*, p. 440.

enterococcus gives rise to a condition clinically resembling enteric fever, and that it is often associated with the *B. typhosus* in other cases.

It is evident, therefore, that the enterococcus plays an important rôle in infective processes, and the work of Major Houston and Captain McCloy would seem to show that many cases of "trench fever" are due to its activity. I think most observers will agree with their conclusion, which is very cautiously stated in the following words: "Our experience with the enterococcus appears to show that when the organism is found in urine it is frequently an infecting agent." In rheumatic conditions it is very common to get enterococci in the urine, and vaccines prepared from cultures are often very efficacious in treatment. Our own observations tend to show that subsequent to an acute infection enterococci continue to be found in the urine. There is evidently a sort of subinfection which, under certain conditions, may become acute.

We are, Sir, yours faithfully,

GEORGINA DARLING, M.B., D.P.H.,
W. JAMES WILSON, M.D., D.Sc.,
Captain, R.A.M.C. (T.F.); Specialist Sanitary
Officer, Belfast District.

Hygiene and Public Health Laboratory, Queen's
University, Belfast, Oct. 19th, 1916.

SOLDIERS AND VENEREAL DISEASES.

To the Editor of THE LANCET.

SIR,—During the past two years the Liverpool Medical Institution has distributed over 160,000 copies of pamphlets especially written in plain non-technical language for soldiers, warning them of the dangers and disabilities incurred by contracting these avoidable diseases. The Army authorities in Egypt have reprinted the tract for their own use. We desire to enlist your support by the insertion of this letter, and invite inquiries for specimen copies from commanding officers, medical officers, chaplains, social workers, and others interested in our soldiers, addressed to the Librarian, the Medical Institution, Liverpool.

I am, Sir, yours faithfully,

CHARLES J. MACALISTER,
President.

Liverpool, Oct. 31st, 1916.

THE ETHICAL STANDARDS OF PANEL PRACTICE.

To the Editor of THE LANCET.

SIR,—In Dr. Mitchell Bruce's address to students at the opening of the winter session the following passage occurs (*vide* THE LANCET, Oct. 21st):—

It is in this way surely that you have been brought to Charing Cross Hospital to-day—not, I am sure, for purely commercial ends, which it is to be feared have been promoted by the panel.

I presume the concluding word refers to National Health Insurance practice, and it strongly suggests, if it does not actually accuse, panel practitioners of lacking in the spirit of medicine which ought to inspire them—that they are tempted by the conditions of panel practice to dishonour their calling. This is an offensive remark, uttered *ex cathedra*, and I trust that the young students who will later on join a panel will not accept the view that panel practice does not claim as many conscientious doctors in its ranks as any other form of medical practice. The integrity of Dr. Bruce's excellent address is marred by this unfortunate reference, which I am sure is quite undeserved.

I am, Sir, yours faithfully,

Kensington, W., Oct. 24th, 1916.

O. ECCLES.

SPINAL ANÆSTHESIA IN ACUTE ABDOMEN.

To the Editor of THE LANCET.

SIR,—The advocates of the above method make no mention of the minor drawbacks, which probably appeal to the anæsthetist more than to the surgeon. Supposing one is dealing with a case in which there are acute suppuration and general peritonitis, surely the mere act of turning the patient on to his side cannot improve the condition; and if there is a large localised abscess on the verge of rupture before adhesions have been firmly developed, then this moving about might possibly tend to break them down. Another

objection is that though the superficial tissues are anæsthetised with ethyl chloride or hypodermic injection of novocaine there is still some pain caused when the needle is pushed through the deep tissues into the spinal canal, which gives rise to a certain amount of shock. There is always the drawback to a nervous patient that he is conscious of the progress of the operation, and when the peritoneum or mesentery is handled to any extent there is considerable discomfort. Lastly, anyone who has any experience of spinal anæsthesia is aware that a small proportion of cases show signs of collapse from the anæsthetic *per se*.

The most satisfactory anæsthesia in acute abdomen, in my experience, is obtained by giving the patient a hypodermic of morphine and atropine followed by gas and oxygen administered with some such apparatus as the Gwathmey, with or without the local injection of novocaine. If the latter is used then there ought to be no difficulty about getting complete relaxation, but even if it is not used the result is so good, in that there is almost complete freedom from shock, that the temporary inconvenience to the surgeon ought to be well compensated for by the advantage gained by the patient. The addition of a small quantity of ether or mixture makes very little difference as regards after-effects to the patient and helps the relaxation.

I am, Sir, yours faithfully,

HUGH R. PHILLIPS, M.D. Edin.,
Senior Anæsthetist, Italian Hospital; Anæsthetist to the King
George Hospital, Royal Flying Corps, and Endsleigh Palace
Hospital for Officers.

Dawson-place, W., Oct. 21st, 1916.

FALLOPIAN TUBE FOUND IN FEMORAL HERNIA.

To the Editor of THE LANCET.

SIR,—The following notes may be of interest in connexion with similar cases reported in THE LANCET of Oct. 21st and 28th:—

A woman while doing housework one afternoon was seized with a sudden severe pain in the lower part of the abdomen. She was about five months pregnant at the time, and thinking she was threatened with a miscarriage she sent for the midwife. The nurse gave her an enema, the bowels acted freely, and the pain lessened somewhat. She became worse later in the evening and I saw her about midnight. Her temperature was normal, pulse 102. Vaginal examination showed no signs of labour. The bowels had acted and she had not vomited, but she looked very distressed, and there was a slight rigidity in the lower part of the abdomen. She was a corpulent woman; she was not aware of the existence of a hernia, and it was only after careful examination that a small swelling no bigger than a walnut was found embedded, so to speak, in the fat of the right groin. It was dull on percussion, irreducible, and had no impulse on coughing; it was thought to be a strangulated femoral hernia containing a small piece of omentum. On opening the sac about a tea-spoonful of turbid serum escaped. The only structure found in the sac was the fimbriated extremity of the Fallopian tube; it was intensely injected and of a dark purple colour. Doubts were entertained as to the vitality, so I excised it and closed up the femoral ring. She carried the foetus to full term, and was delivered of a healthy male child.

The points of interest are the presence of the Fallopian tube in a femoral hernia at the fifth month of pregnancy; the difficulty of exact diagnosis, the absence of vomiting, the movement of the bowels, the dull percussion note suggested omentum. The excision of the tube has apparently not interfered with subsequent conception, for since the operation, five years ago, she has given birth to two full-term children.—I am, Sir, yours faithfully,

J. F. DEVANE, M.D., F.R.C.S. Irel.,
Hon. Surgeon, Limerick County Infirmary, and
St. John's Hospital, Limerick.

Oct. 30th, 1916.

SKIAGRAMS OF GAS GANGRENE.

To the Editor of THE LANCET.

SIR,—In the report of my paper on Gas Gangrene in your issue of Oct. 28th (p. 754) an error appears. The French worker who had great experience with cases showing a fine striation believed that the *vibrio septique* was always found where that X ray appearance was seen. He recognised there were other appearances due to other organisms which were equally capable of giving rise to gas gangrene.

I am, Sir, yours faithfully,

Weymouth-street, W., Oct. 29th, 1916.

AGNES SAVILL.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Killed.

Capt. A. T. Logan, R.A.M.C., attached Grenadier Guards, received his medical education at the University of Glasgow, where he gained the Dr. Gibson bursary, and qualified in April, 1915. He obtained his commission in the R.A.M.C. and went to the front forthwith, and has been mentioned in despatches.

Lieut. W. C. E. Bower, R.A.M.C., attached Newfoundland Regiment, received his medical education at University College, London, and qualified in 1900. After filling appointments at the Carlisle Dispensary and at the Prestwich Asylum, Manchester, he joined the West African Medical Service, and received his commission in the R.A.M.C. in the early part of last September.

Died of Wounds.

Capt. C. M. Nicol, R.A.M.C., received his medical education at the University of Glasgow and qualified M.B., Ch.B. in 1909. He thereupon joined the R.A.M.C. and was gazetted Captain in 1912. At the outbreak of war he was doing duty in Egypt, and later proceeded to France. Captain Nicol has been mentioned in despatches.

Died.

Lieut.-Col. E. Hudson, I.M.S., was a student at University College, London, and qualified in 1882. He obtained his commission in the I.M.S. in 1886, and had held the appointment of superintendent of the Central Prison, Allahabad. He served in the Chin-Lushai Expedition in 1889-90, and was mentioned in despatches. He died at Allahabad.

Wounded.

Capt. M. J. Rees, R.A.M.C.

Capt. F. Hitchcock, New Zealand Medical Corps.

Capt. H. R. Mustard, Canadian Army Medical Corps.

THE VICTORIA CROSS.

The King has conferred this distinction upon the following members of the medical profession :—

Capt. William Barnsley Allen, M.C., R.A.M.C.

For most conspicuous bravery and devotion to duty. When gun detachments were unloading H.E. ammunition from wagons which had just come up, the enemy suddenly began to shell the battery position. The first shell fell on one of the limbers, exploded the ammunition and caused several casualties. Captain Allen saw the occurrence and at once, with utter disregard of danger, ran straight across the open, under heavy shell-fire, commenced dressing the wounded, and undoubtedly by his promptness saved many of them from bleeding to death. He was himself hit four times during the first hour by pieces of shells, one of which fractured two of his ribs, but he never even mentioned this at the time, and coolly went on with his work till the last man was dressed and safely removed. He then went over to another battery and tended a wounded officer. It was only when this was done that he returned to his dug-out and reported his own injury.

Capt. Allen is the only son of Mr. P. Allen, of Scarborough, and was educated at St. Cuthbert's College, Workson, and at Sheffield University, where he won a gold medal in 1913, and qualified M.B., Ch.B. in 1914. After holding a short appointment at Sheffield Royal Hospital he joined the R.A.M.C. in the August following, and was awarded the Military Cross last August.

Capt. Noel Godfrey Chavasse, M.C., R.A.M.C.

For most conspicuous bravery and devotion to duty. During an attack he tended the wounded in the open all day, under heavy fire, frequently in view of the enemy. During the ensuing night he searched for wounded on the ground in front of the enemy's lines for four hours. Next day he took one stretcher-bearer to the advanced trenches, and under heavy shell-fire carried an urgent case for 500 yards into safety, being wounded in the side by a shell splinter during the journey. The same night he took up a party of 20 volunteers, rescued three wounded men from a shell-hole 25 yards from the enemy's trench, buried the bodies of two officers, and collected many identity discs, although fired on by bombs and machine-guns. Altogether he saved the lives of some 20 badly wounded men, besides the ordinary cases which passed through his hands. His courage and self-sacrifice were beyond praise.

Capt. Chavasse is the younger of the twin sons of the Lord Bishop of Liverpool, and was educated at Liverpool College and at Oxford, and qualified in 1912. He was a keen university athlete, as was also his twin brother, and all four sons of the Bishop are in the Army. Capt. Chavasse, previously to the war, held an appointment at the Liverpool Southern Hospital, and on mobilisation he joined the R.A.M.C. and went abroad. He took part in the engagement at Hooge, in connexion with which he was awarded the Military Cross for conspicuous bravery.

MENTIONED IN DESPATCHES.

In a despatch from General Sir Reginald Wingate, Sirdar and Governor-General of the Soudan, dealing with the military operations in that country, the names of the following R.A.M.C. officers are mentioned :—

Lieut.-Col. F. F. Carroll, Major R. G. Anderson, Major W. Byam, Capt. R. G. Archibald, Capt. D. S. Buist, Capt. C. Cassidy, Capt. A. G. Cummins, and Capt. G. Gibbon.

Dr. A. J. Chalmers, of the Wellcome Research Laboratories, Khartoum, and Dr. E. S. Crispin, of the Medical Department of the Soudan Government, are also mentioned.

In a despatch dealing with the Navy the names of Staff-Surgeon E. Cameron, R.N., and Surgeon F. G. Hitch, R.N., are mentioned.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war :—

Second Lieut. E. H. Montgomery, Royal Field Artillery, son of Dr. E. H. Montgomery, of Mallow, Co. Cork, Ireland.

Second Lieut. R. A. S. Wilson, Seaforth Highlanders, elder son of Dr. A. S. Wilson, of St. Leonards-on Sea.

Second Lieut. C. R. P. Corbin, Worcestershire Regiment, elder son of the late Dr. E. R. St. Clair Corbin, of Beckenham, Kent.

Sergt. R. J. Watt, South African Infantry, only son of the late Dr. T. M. Watt, of Hovingham, Yorkshire.

Capt. V. H. Clay, Wilts Regiment, younger son of Dr. C. Clay, of Fovant, near Salisbury.

Second Lieut. C. J. Girling, Hampshire Regiment, elder son of Dr. C. J. Girling, of Cranborne, Salisbury.

SURGEONS FOR THE FRENCH WOUNDED.

Mr. D. H. Illingworth, Directeur-Général, London Committee of the French Red Cross, 9, Knightsbridge, S.W., writes to us as follows :—

Some twenty-five British-staffed hospitals in France are working for the French wounded. In one of these, an important 300-bed hospital in the war zone, the honorary post of surgeon-in-charge will shortly become vacant, and it is hoped to find a British surgeon who is able to undertake this responsible work. There are other vacancies, both honorary and paid, for assistant operating surgeons and house surgeons, and I shall be very pleased to furnish full details of this excellent service to surgeons who are not able to serve with the British Forces.

The supply of medical men is being very seriously drawn upon in every direction, but we hope that the Croix Rouge Française will obtain promptly the necessary assistance to their splendid work.

MEDICAL CERTIFICATES FOR MUNITION WORKERS.

The Minister of Munitions has recently called the attention of the Council of the British Medical Association to the difficulty experienced by firms engaged on munitions work in dealing with application from workmen for leaving certificates, owing to the alleged fact that medical certificates recommending a change of employment have sometimes been issued by practitioners without sufficient consideration. We have no details of the grounds on which these certificates were issued, but it is evidently to the advantage of the health of the munition worker, who now forms no inconsiderable proportion of the total civilian population of the country, to have the supervision of his or her own medical adviser, who should state his opinion without fear or favour. And there are two reasons why the practitioner should keep an open mind and not recommend a change of employment without careful consideration of the special circumstances. In the first place, the conditions in controlled works as regards hours of employment, intervals of relaxation, provision of cheap and adequate meals, are such that a change may readily turn out to be a disadvantage to the worker. And in the second place, especially where the labour of women and young people of either sex is concerned, the workers' health has been made the direct care of the Health of Munition Workers Committee, and in many instances already the advice of nurse or of medical officer is available in the factory. Some collaboration between these and the worker's home doctor is evidently desirable, and the added knowledge might save the issue of a certificate by the latter based on insufficient or misleading data.

OBITUARY OF THE WAR.

ALFRED HUGH BENSON, M.R.C.S. ENG., L.S.A.,
MAJOR, ROYAL ARMY MEDICAL CORPS.

Major A. H. Benson, who died on active service on Sept. 24th, was only surviving son of the late Richard Benson and of Mrs. Benson, of 74, Philbeach-gardens, S.W. He was educated at St. Peter's College, Radley, and Caius College, Cambridge, qualifying in 1887. He served through the South African campaign, was wounded at Johannesburg while attached to the Gordon Highlanders, and received the Queen's medal with five clasps and the King's medal with two clasps. He settled in Cleobury Mortimer, where he built up a large practice in and around the town. On the outbreak of war he volunteered for service and served for eight months with the Expeditionary Force, returning to England for a home appointment. He died



when on military service at Scarborough and was buried in Seamer churchyard.

Major Benson is described as a staunch colleague and as a commanding officer who was ever watchful of the interests and comfort of his men. He leaves a widow, a daughter, and a son who is serving with Lord Strathcona's Horse at the front.

THOMAS LEWIS INGRAM, M.A. CANTAB., M.R.C.S. ENG.,
D.S.O., M.C.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain T. L. Ingram, D.S.O., who was killed in action on or about Sept. 16th, at the age of 41, was the eldest son of Thomas Lewis Ingram, of The Priory, Wimbledon Common. He was educated at Monkton Combe School and Trinity College, Cambridge, qualifying in 1903, and then held house appointments at Westminster and Poplar Hospitals. He served as a trooper in the Imperial Yeomanry during the



South African War, gaining the Queen's medal with three clasps. He was in practice at Welford, near Rugby, when the present war broke out; he applied at once for a commission in the Royal Army Medical Corps and in November, 1914, was attached as medical officer to the King's Shropshire Light Infantry, with which regiment he served till his death.

Early in 1915 Captain Ingram was mentioned in despatches; on Sept. 6th, 1915, he was

awarded the Military Cross "for conspicuous devotion to duty and energy at Hooge"; and on May 31st, 1916, he was awarded the D.S.O. "for conspicuous gallantry and devotion to duty. He collected and attended to the wounded under very heavy fire and set a splendid example. Since the commencement of the war he has been conspicuous on all occasions for his personal bravery." His colonel, in writing of him as the bravest man he had ever met, added: "He was loved by every man in the regiment."

Captain Ingram married in 1909 Lilian, eldest daughter of the late Lieutenant-Colonel Donnithorne, Royal Scots Greys, and leaves two children.

WILLIAM FRANCIS MACALEVEY, M.R.C.S. ENG.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain W. F. MacAlevey, who was killed in action on Sept. 27th, at the age of 26, was the elder son of Mr. W. C. MacAlevey, of Leicester. He was educated at Stoneygate Preparatory School, Leicester, and at Mount St. Mary's College, Chesterfield, where he was captain of the school, and at St. Mary's Hospital Medical School, where he gained a science scholarship. He obtained the diplomas of the Conjoint Board in 1915, and had intended to take the Final M.B. Lond. after the war. In February, 1915, he took a temporary commission in the R.A.M.C. and went to the front with a field ambulance, to which he became transport officer and later adjutant. On the morning of his death



a squad of stretcher-bearers bringing in a wounded man reported that one of their number had fallen by the way, and was, they thought, killed. Captain MacAlevey went out at once alone to look for the missing man and was killed instantly by a shell.

At hospital Captain MacAlevey was an athlete, being captain of the Association football team and a member of the Rugby fifteen. His senior officer describes him as a man eminently suited for the double profession of doctor and soldier, and as untiring in his devotion to duty. As transport officer "he used to care for the horses as if they were sick men."

MARTIN WILLIAM LOY, M.R.C.S. ENG.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant M. W. Loy, who was killed in action on August 28th, 1916, at the age of 43, was fifth and youngest son of the late S. H. Loy, of Keld Head, Pickering. He took his medical course at the London Hospital, obtaining the Conjoint Board qualification in 1894, and then held in succession the appointments of clinical assistant, house surgeon, and receiving-room officer at the hospital. He then entered practice at Thornton-le-Dale, Yorkshire, in partnership with Dr. R. A. Scott, removing in 1902 to Gillingham, Kent. Early in 1916 he obtained a commission in the Royal Army Medical Corps, and went to France with a casualty clearing station, being afterwards attached to the Cheshire Regiment until the time of his death. Lieutenant Loy married in 1909 Edith Christine, elder daughter of the late Lieutenant-Colonel H. D. Bicknell, of Lymington, Hants.



It is reported that Surgeon-Probationer A. L. Strachan, R.N.V.R., has lost his life in the mine-sweeper *Genista*, torpedoed on Oct. 23rd.

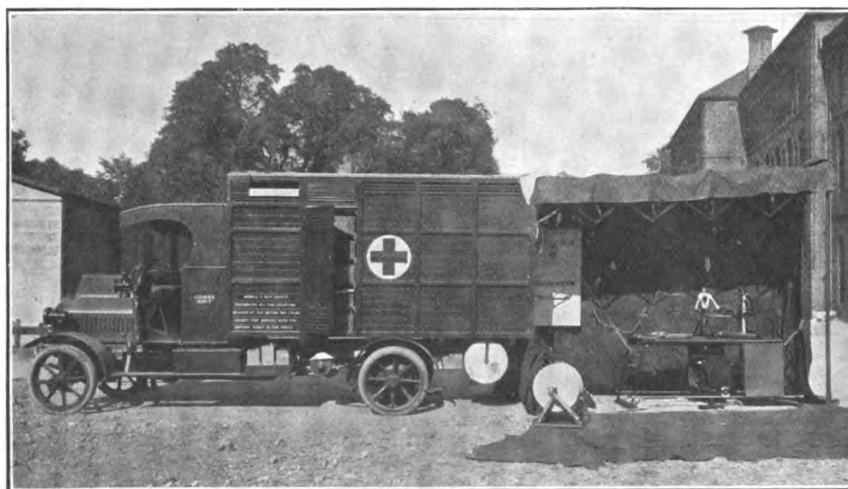
PROVISION OF FOOD AND COMFORTS FOR NAVAL PRISONERS.

Although a Central Prisoners of War Committee of the British Red Cross Society and the Order of St. John of Jerusalem has been appointed, no change has been made in the work of the Ladies' Emergency Committee of the Navy League and the Royal Naval Division Comforts Funds, which will continue to act in regard to the Royal Navy and the Royal Naval Division in the same capacity as regimental associations in respect of the Army. The address of the Ladies' Emergency Committee of the Navy League is 47, Grosvenor-square, W., and of the Royal Naval Division Comforts Fund, Denison House, Westminster, S.W.

A MOTOR X RAY OUTFIT.

We give an illustration of one of the five X ray motor-wagons recently presented by the Scottish branch of the British Red Cross Society for service with the British Army in the field. The wagon has been made by the Albion Motor Car Company, Limited, Glasgow; the chassis is of the 32 h.p. Albion 3-ton type, and the body has been constructed to meet

Motor Wagon with X Ray Outfit.



the special requirements. The door half open in the centre of the body shows the accumulators, which are supplied with current from a dynamo mounted on the chassis under the driver's seat; the dynamo is driven by means of a clutch arrangement from the cardan shaft of the vehicle. The X ray tube is fixed to a carriage on rails for operating purposes. The negative-holder is above the table, as well as a small screen for protecting the legs of the operator travelling on a single rail to follow the X ray tube. The two cable-drums, one attached underneath the rear portion of the body, and the other seen lying on the ground, are to enable the X ray operating table to be taken some distance away from the vehicle should circumstances make this necessary. The canopy shown extended at the back of the wagon is collapsible and the whole apparatus can be stored inside the vehicle for transporting from place to place.

THE FEDERATED MALAY STATES HOSPITAL AT KIMPTON.

The military hospital maintained at Blackmore End, Kimpton (Herts), by public subscriptions from the Federated Malay States for sick and wounded soldiers has been enlarged by the addition of a new ward containing 44 beds. This brings the total number of beds available to over 200. A large recreation room is in course of construction. The hospital is under the charge of Captain G. D. Freer, R.A.M.C. (T.), formerly Principal Medical Officer, Selangor, F.M.S. Miss Willis, late of the Royal Free Hospital, is matron.

THE ARMENIAN REFUGEES (LORD MAYOR'S) FUND.

The good work which this Fund is doing is well illustrated by the fact that the recent retreat of 25,000 Armenians through dangerous mountain passes, under the guidance of Mr. George F. Gracey, an American Missionary, was successfully accomplished owing in a large measure to the money provided by the Lord Mayor's Fund. The Fund, which also assists Assyrian refugees, is in urgent need of financial support and is deserving of every help. Donations may be sent to either 96, Victoria-street, S.W., or to the Mansion House, London.

THE WAR OFFICE AND THE DUBLIN HOSPITALS.

Since early in the war the general hospitals of Dublin, as of course those in other centres, have acceded to the request of the War Office to treat wounded soldiers in as large numbers as they can accommodate. All the hospitals have set apart wards for the purpose and have placed their resources unreservedly at the disposal of the military authorities. Payment has been made to the hospitals at a rate of from 2s. to 4s. a day for soldiers, the usual rate being 3s. a day, medical and surgical attendance being given free by the visiting staffs in all cases. Early in the war the payments made by the War Office were probably sufficient to pay for the maintenance of the soldier patients, but with the present high prices they have been inadequate, and the reception of wounded soldiers has imposed a tax on the finances of the hospitals. In these circumstances the hospital authorities have received with mixed feelings a memorandum from the War Office, stating that it has come to the knowledge of the War Office that in some cases the payments made to the hospitals more than covered the actual outlay on food, heating, surgical necessities, &c.; that in

future no payment will be made in excess of what is spent on such objects as those enumerated; that no charge is to be made for medical or nursing services, or for rent of premises. "It is impossible," says our Dublin correspondent, "to find any justification for the demand that medical and nursing services are to be given gratuitously, although as a matter of grace they have been so given. The lack of tact shown by the War Office is not unlikely to make the hospitals insist that the entire expense of maintaining soldiers shall be borne by the authorities."

WOUNDED ALLIES RELIEF COMMITTEE.—The address of the Wounded Allies Relief Committee is now changed from Sardinia House, Kingsway, W.C., to 8, Grosvenor-gardens, S.W., the new premises having been lent to the committee by Lord Ilchester.

MALARIA IN CALCUTTA.—At a recent meeting the Health Special Committee of the Calcutta Corporation considered the health officer's proposal to reorganise the mosquito brigades and to undertake systematic anti-malaria measures in selected areas. A number of mosquito brigades are appointed for a period of about six months every year. They usually work from October to March in the suburban wards. The proposed expenditure under the new scheme is Rs.3,214 as against Rs.4,749. The committee temporarily sanctioned the scheme, and asked the medical officer to get out a scheme for concentrating the work of the mosquito brigades on particular localities. It was also decided to ask Dr. C. A. Bentley, Sanitary Commissioner, Bengal, to help the committee in the matter.

Medical News.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At the recent dental examinations just concluded the following candidates passed the First Dental Examination:—

Alfred McCamley and James Rowan Sherrard.

The following passed in the subject of Chemistry and Physics:—

Herbert Daniel Howard.

At the same diet the following candidates passed the Final Examination and were granted the diploma L.D.S. R.C.S.Edin.:—

Bertine Loring Kelly, United States; Johannes Augustus Stegmann, South Africa; John McLean Foreman, Kirkcaldy; Roelof George du Toit, South Africa; John Russell Watson, Edinburgh; and James Henry Brown, Edinburgh; and George Laing passed in the subject of Medicine and Surgery.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee, held on Oct. 10th, 31 cases were considered and £300 voted to 30 of the applicants. The following is a summary of some of the cases relieved:—

M.R.C.S. Eng., aged 71, a widower, who practised at Great Torrington and West Africa, and latterly had acted as a ship's surgeon. Suffers from ague contracted in Africa. On his last sea trip the ship was torpedoed, and so has not risked another voyage. Only income the old-age pension. Voted £6 in six instalments.—L.R.C.S. Irel., L.R.C.P. Edin., aged 74, married, who practised at Wycombe and Marlborough. For the last seven years has suffered from cerebral arterial sclerosis. Wife's income £1 per week, and owing to high price of food unable to pay their way. One married daughter, unable to help. Voted £18 in 12 instalments.—Daughter, aged 60, of L.R.C.S. Edin. who practised at Liverpool. For many years worked as a governess, but had to give it up after a long illness. Only income derived from letting a furnished room in her cottage, but of late has not been successful, and owing to high prices unable to manage. Voted £5.—Widow, aged 48, of M.R.C.S. Eng., who was an army doctor and died in 1905. After death of husband was able to earn a living by needlework and breeding Pekinese dogs, but since the war commenced has not been successful. Only income £30 a year from friend. Not eligible for War Office pension. Two children who can only help slightly. Voted £10 in two instalments.—Daughter, aged 49, of M.D. Glasg. who practised in Ireland and died in 1898. Applicant is a teacher of music, but since the war has not been able to get pupils. Has aged mother, a pensioner of the Fund, who is helpless, and requires her daughter's attendance, which prevents applicant from undertaking work away from home. Voted £5.—Daughter of M.R.C.S. Eng. who practised at Hadleigh. Applicant was a governess for 33 years, but owing to a breakdown in health had to discontinue the work. Income £18 from dividends and £21 pension from another society, and earns a little by needlework. Owing to the high price of food unable to manage at present. Voted £2 and referred to the Guild.—Wife, aged 53, of M.R.C.S. Eng. who practised until recently at Tunbridge Wells. Her husband a few months ago had a paralytic seizure which has left him helpless. His practice, which produced between £500 and £600 a year, has now been sold, and he is to receive one-third of the proceeds for three years, and as the practice was more or less a personal one, less than £100 a year is only expected. There are 11 children, seven of which are at home, and four going to school, and elder ones only able to help very slightly. Voted £2 and referred to the Guild.—Daughter, aged 43, of M.R.C.S. Eng. who practised at Notting-hill and died in 1885. Mother, who for many years was helped by the Fund, has died recently from cancer. Applicant and sister have tried to earn by letting lodgings, but owing to living on the Kent Coast have been unsuccessful lately. Propose giving up house, and try to obtain other work, but want some immediate help. Voted £10.—Widow, aged 30, of L.R.C.P. & S. Edin. who held an official appointment and died in April, 1916. Applicant left with five children, aged 1 to 9 years, and the only money an insurance of £200. Has removed to Scotland, and hopes to be able to make a little by letting furnished rooms. Highly recommended. Voted £10 in two instalments.—Widow, aged 65, of R.A.M.C. officer who died in June of this year. Only income a pension of £34 per annum. Has two children married and unable to help. Long illness of husband, who had to live on his pension for many years. Applicant too old to obtain work, but she is willing to do what she can. Voted £10.—Daughter, aged 64, of L.S.A. Lond. who practised at Sunderland and died in 1883. Applicant with a sister was left unprovided for. The sister was a pensioner of the Fund, and had an annuity from another society, but she died in August, and the applicant, who was dependent upon her, is now penniless and too ill to work. Voted £12 in 12 instalments.—Daughter, aged 48, of M.D. Lond. who practised at Newcastle-on-Tyne. Applicant was left quite unprovided for, and owing to indifferent health of herself and sister unable to work. A friend who used to help unable to do so now owing to depleted income in consequence of the war. Relieved twice (some years ago). Helped by the Guild. Voted £12 in 12 instalments.—Widow, aged 71, of L.R.C.P. & S. Glasg. who practised in East London and died in 1913. Left totally unprovided for at husband's death, who had a long illness. Has four children, three married and unable to help, the other, an invalid daughter, lives with her mother. Has a pension of £30 from a City Company, and her brother and sister help a little. Relieved three times, £36. Voted £12 in 12 instalments.—Daughter, aged 56, of M.R.C.S. Eng. who practised at Newport, Mon., and died in 1892. Since father's death has endeavoured to make a living by keeping a small school, but owing to the increased cost of living unable to make it pay. Relieved once, £12 in 12 instalments. Voted £12 in 12 instalments.—Daughter, aged 46, of M.R.C.S. Eng. who practised at Redcar and died in 1873. Owing to ill-health unable to work, and only income a pension from the R.U.K.B. Assoc. of £21. Mother has £65 per year, but

is an invalid, and a sister, who is a trained nurse, has had to give up her appointment to look after her mother and sister. Relieved five times, £52. Voted £10 in two instalments.—Daughter, aged 60, of M.R.C.S. Eng. who practised at Dorking and died in 1873. Applicant left unprovided for, and is a permanent invalid. Income 5s. a week from another charity, and a friend allows her £25 a year. Relieved four times, £40. Voted £10 in two instalments.—Widow, aged 57, of L.F.P.S. Glasg. who practised at Heaton-on-Tyne and died in 1899. Was left unprovided for with six children, three of whom are now married and unable to help. Two delicate daughters are at home, and help to look after lodgers. Applicant's health bad, so unable to do anything. Relieved 11 times, £118. Voted £12 in 12 instalments.—Daughter, aged 55, of L.R.C.P. Glasg. who practised at Birmingham and died in 1874. Left unprovided for, and tries to earn a living by letting lodgings in Wales, but has not been successful the last few years. Relieved five times, £56. Voted £12 in 12 instalments.—Daughter, aged 51, of L.R.C.P. Glasg., who practised at Glasgow and died in 1897. Up to the commencement of the war managed to earn a living by taking in lodgers and paying guests in her house on the north-east coast of Scotland, and has recently been confined to bed. Relieved twice, £20. Voted £10.—Widow, aged 69, of M.B. Edin. who practised in the Shetland Islands and died in 1907. Applicant has very indifferent health, but has tried to live on her pension of £30 from another medical charity, but owing to the increase in the price of food has got into difficulties. Relieved once, four years ago, £6. Voted £12 in 12 instalments.—M.R.C.S. Eng., aged 81, who is practising in Cornwall, and previously at Nottingham. Lost his practice through the Insurance Act, and during the last 12 months has only earned £34. Relieved twice, £20. Voted £18 in 12 instalments.—M.D. Edin., aged 75, married, who practised for many years in London. Is now suffering from a paralytic seizure and unable to work. Wife's income only £50. Has recently received an Epsom Pension. Relieved once, £18. Voted £18 in 12 instalments.—Daughter, aged 43, of M.R.C.S. Eng. who practised at Peterborough and died in 1907. Applicant left unprovided for. Some years ago the Fund granted money to enable her to qualify for mission work. Her health, however, broke down, and she is now engaged as a clerk at £1 a week. Owing to the increased cost of food finds this insufficient. Relieved once, £20. Voted £7, and referred to the Guild.—Widow, aged 71, of L.R.C.S. Irel. who practised at Watworth and died in 1915. Left unprovided for with one daughter, who is now earning her living as a clerk. Applicant's only income the Old Age Pension. Relieved twice, £14. Voted £12 in 12 instalments.—Widow, aged 62, of L.R.C.S. Irel. who practised in London and died in 1893. Until two years ago applicant managed to earn her own living, but was overtaken by illness and had to be operated upon, and she has been in indifferent health since. A furnished room is provided by friends, but she has no income. Relieved once, £12. Voted £12 in 12 instalments.—Widow, aged 55, of M.B. Durh. who practised at Epsom and died in 1887. Left with two daughters, who were educated by the Guild and are now acting as clerks. Applicant's health has broken down, and she requires help for dentistry and for the purchase of an electrophone for deafness. Relieved twice, £17. The Fund contributed £5 to the Guild towards any assistance they thought desirable.

Subscriptions may be sent to the honorary treasurer, Dr. Samuel West, 11, Chandos-street, Cavendish-square, London, W.

THE MEDICAL SCHOOL OF THE UNIVERSITY OF CAMBRIDGE.—The number of medical students who have entered Cambridge this year is 25, showing a further falling off from the 41 who entered in 1915, the 64 in 1914, and the 116 in 1913.

DONATIONS AND BEQUESTS.—The late Mrs. Laura Catherine Joad, of Patching, near Worthing, left by will £400 to the Worthing Hospital, and £200 each to the Royal Hospital for Incurables, Putney, and the Earlswood Asylum for Idiots.—By the will of the late Mr. Edward Breviss the London Hospital will receive £5000.—The late William P. Lowrie, of Glasgow, has bequeathed £56,000 among various charitable institutions, including £10,000 each to the Glasgow Royal Infirmary and the Glasgow Western Infirmary, and £3000 each to the Glasgow Victoria Infirmary and the Royal Sick Children's Hospital.

ALVARENGA PRIZE OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.—The next award of the Alvarenga prize, amounting to about \$250, will be made on July 14th, 1917, provided that an essay deemed by the committee of award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, and must not have been published. The conditions can be obtained from the secretary, 19, South 22d-street, Philadelphia, Pa., U.S.A.

Dr. E. Walpole-Simmons has been selected at a private meeting of the Worcester city council for the office of city chamberlain, an ancient civic office which dates back for centuries. He has been for some time chairman of the health committee of the city council.

THE Institute of Hygiene is lending its help in the crusade against venereal disease by arranging for an instructive series of lectures at the Institute. These lectures, which are delivered at 4 p.m. each Tuesday, are specially intended for district nurses, health visitors, and midwives. The lectures began on Tuesday last, when Sir Malcolm Morris discussed the relation of venereal disease to public health. Dr. J. H. Eyre, Lady Barrett, and Mr. E. R. Townley Clarkson will continue the series.

EPSOM COLLEGE ROYAL MEDICAL FOUNDATION.—The Council invite applications for a "Christie" pension of £45 a year, and for two "France" pensions of £30 each a year. Candidates must be members of the medical profession who are not less than 60 years of age, and whose income does not exceed £60 a year. Further particulars and forms of application can be obtained from the Secretary, at the office of the College, 37, Soho-square, W.

LONDON HOSPITAL.—A short course of lectures on the "Early Diagnosis and Treatment of Syphilis" will be given by Dr. J. H. Sequeira, physician in charge of the skin department of the hospital, on Thursdays, Nov. 23rd and 30th and Dec. 7th and 14th, at 11 A.M. In connexion with these lectures Dr. J. McIntosh has arranged to give practical demonstrations of the examination for spirochetes and Wassermann test. Members of the medical profession will be admitted on presentation of their cards.

MEDICAL MAYOR.—At a private meeting of the Droitwich town council Dr. P. A. Roden, J.P., was adopted unanimously as the mayor of the borough for the ensuing year. This is the first occasion in the history of the borough that a mayor has been chosen from outside the council. Dr. Roden's father, the late Dr. S. S. Roden, served in the office of mayor for five years, the last four consecutively, when he was an alderman of the borough. Dr. P. A. Roden is the medical officer of the borough and the medical officer of the Droitwich union workhouse.

Parliamentary Intelligence.

HOUSE OF LORDS.

TUESDAY, OCT. 31ST.

The Position in Mesopotamia.

THE EARL OF DERBY (Under Secretary for War) made a statement in regard to the position of affairs in Mesopotamia. In the course of it he said that the situation in regard to supplies was clearly more satisfactory. There was a slight shortage in alternate diets. The fleet of hospital ships had been considerably augmented, and it was now possible to transport the sick and wounded without delay and with reasonable comfort. Some specially fitted hospital ships were being built and expedited, but they would not be available until next year. The medical services had been greatly augmented, and a number of hospitals, medical officers, and nurses had been despatched along with medical stores and outfits. Regarding the amount of sickness it was difficult to give reliable figures. During the period between April 29th and July 29th, 1916, the admissions to hospital of British troops averaged 2739 per week, deaths 108 per week, and numbers evacuated 1048 per week. From August 5th to Sept. 23rd, 1916, the weekly average was: admissions to hospital 1705, deaths 39, and evacuations 738.

HOUSE OF COMMONS.

WEDNESDAY, OCT. 25TH.

T.N.T. Poisoning.

MR. ANDERSON asked the Under Secretary for the Home Department whether he was aware that of the 472 cases of industrial poisoning reported during the nine months ending September, 1916, 120 occurred from toxic jaundice and that, of 62 deaths, 33 were attributable to this cause; whether he could state how many of these cases and deaths were due to poisoning from tri-nitro-toluene; and what action he proposed to take.—MR. BRACE said in reply: The figures are correctly stated in the first part of the question. The number of these cases due to T.N.T. poisoning was 95 and the number of deaths 28. Every possible step is being taken by my department in concert with the Ministry of Munitions to investigate or deal with this disease.

Barrackpore Hospital.

MR. GEORGE LAMBERT asked the Secretary of State for India whether cooling-fans and lighting installations were available for the hospital and barracks at Barrackpore, where West of England regiments were stationed, in India.—MR. C. ROBERTS (on behalf of Mr. CHAMBERLAIN) replied: Electric lights and fans will be installed in the hospital at Barrackpore before next hot weather. The Government of India report that they are taking up electrification schemes as quickly as the staff and materials available permit, the order of urgency being determined by medical authorities.

THURSDAY, OCT. 26TH.

Treatment of Venereal Diseases.

Colonel NORTON-GRIFFITHS asked the Parliamentary Secretary to the Local Government Board whether his

attention had been called to various resolutions passed by public bodies calling for Government action in regard to the increase of venereal disease; and whether immediate steps would be taken with a view to notification and compulsory treatment, thus mitigating the danger arising to innocent persons by contagion and also safeguarding the welfare and health of our troops.—MR. HAYES FISHER answered: My attention has been drawn to the resolutions referred to. As the House is aware, the Government has already taken definite action in accordance with the recommendation of the Royal Commission on Venereal Diseases. That Commission, however, came to the unanimous conclusion that no system of notification of these diseases should be put in force at the present time, and after careful consideration I am satisfied that more progress is likely to be achieved in the immediate future in diminishing these diseases by following their recommendation than by taking the steps indicated in the resolutions.

MR. ANDERSON: Has the right honourable gentleman seen the manifesto signed by Mrs. Pankhurst, Mrs. Lloyd George, and other ladies upon this question, and can he say whether the Government, before they take action, if they do intend to take any action, in the direction of the compulsory notification of venereal disease, will consider that the whole weight of expert evidence is in the direction of showing that this would have exactly a contrary effect, and that it would drive the matter underground, and—

THE SPEAKER: Order, order. The honourable Member is now stating arguments.

Captain C. BATHURST asked the right honourable gentleman whether, as stated in the recently published Women Social Workers' Appeal, venereal disease was certainly spreading in the United Kingdom and affecting a large number of innocent persons; and, if so, whether he would institute compulsory notification and compulsory treatment, as in the case of other dangerous contagious diseases, and at the same time take steps to check the activities of fraudulent persons professing ability to cure the disease, as recommended by the Select Committee on Patent and Proprietary Medicines.—MR. HAYES FISHER answered: On the question of notification I may refer my honourable friend to the reply I have just given. The suggestion contained in the latter part of the question is under consideration.

New Medical Benefit Regulations.

MR. CHANCELLOR asked the Representative of the National Insurance Commissioners whether, in view of the objection by certain sections of the medical profession to Clause 3 of the proposed new medical benefit regulations, he had any method of dealing with the situation in the event of the doctors deciding not to continue service if the clause was maintained.—MR. C. ROBERTS answered: In view of the conferences which have recently taken place, the contingency contemplated in the question is, I think, not likely to arise.

Repatriated Civilians.

MR. HAYES FISHER informed Mr. MALCOLM that the Government Committee on the Prevention and Relief of Distress had made arrangements with the Central Charities Committee for the care of British civilian prisoners released from internment in enemy countries. The Central Charities Committee met them at the port of arrival, afforded temporary assistance and shelter to those in need, arranged for the provision of medical and hospital treatment for sick cases, other than the serious cases which were dealt with by the Red Cross Society, and helped them to obtain employment.

Home Hospital Reserve.

MR. TYSON WILSON asked the Financial Secretary to the War Office whether he was aware that a large number of men who belonged to the Home Hospital Reserve and who had been on duty since the beginning of the war joined this reserve on the understanding that they would be retained for service at the home hospitals, and that many of these men, some of them over military age, were being drafted for service abroad into any unit that the Army authorities selected; and whether, seeing that these men were serving under a special agreement, they had the right of appeal to any tribunal if they objected to serve abroad.—MR. FORSTER replied: The men of the Home Hospital Reserve joined originally for service in hospitals at home. Many of them, however, volunteered for service with armies in the field, and of these a considerable number have been drafted for service overseas in some unit of the Royal Army Medical Corps. Those who did not volunteer have been retained at home.

TUESDAY, OCT. 31ST.

Settlement of Insurance Accounts.

MR. CHANCELLOR asked the representative of the National Insurance Commissioners whether the figures in respect of the final settlement of the remuneration due to doctors for the year 1915 had been furnished to all insurance committees; which insurance committees had distributed the moneys; when the practitioners who had not yet received the

moneys due to them might expect payment; and whether he could do anything to expedite the settlement.—Mr. C. ROBERTS wrote in reply: Figures enabling the final settlement for 1915 to be made have been furnished to all insurance committees in England, and in Scotland and Wales figures enabling further or final payments to be made have been, or will shortly be, furnished to insurance committees in these countries. I am unable to give the particulars asked for in the second part of the question without obtaining a return from all insurance committees, but if the honourable Member has in mind any particular case of delay I will make inquiries.

Industrial Disease.

Mr. ELLIS DAVIES asked the Under Secretary for the Home Department whether disease caused by picric acid entitled the workman affected to compensation under the Workmen's Compensation Act; and, if not, whether he could, in view of the number concerned, add the disease to the Schedule to the Act.—Mr. BRACE replied: The only diseases normally attributable to processes in the manufacture of, or involving the use of, picric acid are eczematous ulceration of the skin, or dermatitis, and poisoning by nitrous fumes. Both of them are scheduled under the Workmen's Compensation Act.

The Notification of Venereal Disease.

Earl WINTERTON asked the Prime Minister whether, in view of the urgency of the matter, he would introduce legislation to make compulsory the notification of venereal disease in all its forms, and criminal its wilful transmission by an infected to a healthy person.—Mr. BONAR LAW (on behalf of Mr. ASQUITH) said: With regard to the first part of the question, I would refer my noble friend to the answers given on behalf of the Local Government Board on Thursday last. The Home Secretary is considering the suggestion contained in the last part of the question.

Treatment of Discharged Soldiers.

Answering Lord H. CAVENDISH-BENTINCK, Mr. LLOYD GEORGE (Secretary for War) said: The War Office is charged with establishing an organisation for the training and treatment of the discharged soldier, and this will be done by means of a civil organisation. The matter is receiving the most careful consideration.

Body-shields for Troops.

Mr. HAZLETON asked the Secretary for War whether there had been any practical outcome of the investigations and experiments into the problem of devising body-shields for the troops at the front; and whether he could say what the present position with regard to the matter now was.—Mr. LLOYD GEORGE replied: A report on the subject has been received from Sir Douglas Haig, and steps are being taken to meet his wishes. It is undesirable to give further details.

WEDNESDAY, NOV. 1ST.

Nurses Registration.

Major CHAPPLE asked the Prime Minister whether, in view of the increasing urgency of enabling those in need of nurses to distinguish those who were fully trained from those who were not, and in recognition of the national work performed by nurses in the care of the sick and wounded, he would bring in a Bill on similar lines to the one submitted to him by the Central Committee for the State Registration of Nurses.—Mr. ASQUITH wrote in reply: This is a highly controversial proposal, as my honourable friend is aware, and I cannot at the present time undertake to introduce it.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

MCKINNEY, B., has been appointed Medical Officer to the Ely Dispensary District by the Enniskillen Board of Guardians.
MITCHELL, ALEXANDER PHILIP, F.R.C.S., Edin., M.Ch. M.D., Interim Surgeon to the Royal Hospital for Sick Children, Edinburgh.
FRANKNELL, J. T., M.D. Glasg., Medical Officer of Health for the Borough of Falkirk.
SAMARAWARA, M. E., M.R.C.S., L.R.C.P. Lond., L.M.S.S.A. Lond., Medical Officer to the Birmingham General Dispensary.
WILSON, J., Certifying Surgeon under the Factory and Workshop Acts for the Irvine District of the county of Ayr.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BIRMINGHAM CITY EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary £300 per annum.

BRIGHTON, ROYAL SUSSEX COUNTY HOSPITAL.—Junior House Surgeon, unattached. Salary £280 per annum, with board.
BRISTOL GENERAL HOSPITAL.—Casualty House Surgeon. Salary at rate of £175 per annum, with board, &c.
BRISTOL ROYAL INFIRMARY.—House Physician. Salary at rate of £120 per annum, with board, &c.
BURY INFIRMARY.—Senior House Surgeon. Salary £250 per annum, with board, &c.
ILFORD COUNCIL EDUCATION COMMITTEE.—School Oculist. Salary 1½ guineas for each session of two and a half hours.
GLOUCESTER, GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION.—Surgeon.
HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Assistant Resident Medical Officer. Salary £103 per annum, with board, &c.
LEICESTER ROYAL INFIRMARY.—Pathologist. Salary £500 per annum.
MANCHESTER COUNTY ASYLUM, Prestwich.—Locum Tenens. Salary £7 7s. per week, with board, &c.
NETLEY, SOUTHAMPTON, WELSH HOSPITAL.—Medical Officer. Salary £400 per annum, with board, &c.
NEW HOSPITAL FOR WOMEN, Roston-road.—Temporary Female Assistant Surgeon for six months. Also Female House Physician, Two House Surgeons, and Obstetric Assistant for six months. Salaries at rate of £50 per annum, with board, &c. Also Anaesthetist. Salary £10 10s. Also Clinical Assistant for Ophthalmic Department.
ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Dental Surgeon.
SALFORD UNION INFIRMARY, Hope, Pendleton, near Manchester.—Female Assistant Resident Medical Officer. Salary £250 per annum, with board, &c.
SHEFFIELD, ROYAL INFIRMARY.—Two House Surgeons. Salary £100 per annum, with board, &c.
VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST ON THE SEPARATE PRINCIPLE.—Assistant Resident Medical Officer.
VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Physician. Salary £200 per annum, with board, &c.
WALSALL AND DISTRICT HOSPITAL.—Assistant House Surgeon and Anaesthetist. Salary £175 per annum, with board, &c.
THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Crossgar, in the county of Down, and at Lytham, in the county of Lancaster.

Births, Marriages, and Deaths.

BIRTHS.

BARNES.—On Oct. 24th, at Hill House, Eye, Suffolk, the wife of Lieutenant H. E. Barnes, M.D., R.A.M.C., of a son.
RANKIN.—On Oct. 24th, at Fitzroy-place, Glasgow, Ivy (née Taunton), the wife of Temporary Captain W. Rankin, R.A.M.C., of a son.
ROSE-HUTCHINSON.—On Oct. 28th, at Malabar-hill, Bombay, the wife of Major L. T. Rose-Hutchinson, I.M.S.—a son.

MARRIAGES.

PEARCE GOULD—JACKSON.—On Oct. 25th, at St. Mary's, Betteshanger, Eric Lush Pearce Gould, F.R.C.S., Temporary Surgeon, R.N., to Audrey Mitchell, daughter of the late Mr. Lawrence Jackson, K.C., and of Mrs. Jackson, of Updown, Basingstoke.
PLATT—TURNER.—On Oct. 27th, at Marylebone Parish Church, Harry Platt, M.S., F.R.C.S., Capt. R.A.M.C., to Gertrude S., second daughter of Mr. R. Turney, late of Linslade, Bucks.
THACKER-NEVILLE—TRESHAM.—On Oct. 25th, at St. Paul's, Onalowsquare, William Stewart, M.D. (T.C.D.), F.R.C.S., Edin., of the Church of England Mission, and Union Medical College, Peking, Temporary Captain, R.A.M.C., to Maud, youngest daughter of the late Mr. D. H. Tresham, Beylah Indigo Concern, Benares, India, and of Mrs. Tresham, Purton, Eastbourne, England.

DEATHS.

HUDSON.—On Oct. 14th, at Allahabad, India, Lieutenant-Colonel Ernest Hudson, F.R.C.S., I.M.S., youngest son of Henry Lombard Hudson, late of Harleston, Norfolk.
NICOL.—On Oct. 23rd, died of wounds, Captain C. M. Nicol, M.B., R.A.M.C., D.A.D.M.S., aged 23.
VAUGHAN-HUGHES.—On Oct. 25th, at Cemmas Court, Hemel Hempstead, James Vaughan-Hughes, M.D., L.R.C.P. Lond., aged 95.
WILKINS.—On Oct. 27th, at Stayer House, Eye, Colonel James Sutherland Wilkins, I.M.S., D.S.O., aged 65.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

CHURCHILL, J. AND A., London.
Moore's Manual of Family Medicine and Hygiene for India. Published under the authority of the Government of India. Eighth edition. By C. A. Sprawson, Major, I.M.S. With Foreword by Sir C. Pardey Lukis, Director-General, I.M.S. Price 6s. net.
HEINEMANN, WILLIAM, London.
Student's Text-book of Surgery. By H. Norman Barnett, F.R.C.S., Major and Officer Commanding 3/2nd South-Western Mounted Brigade Field Ambulance. Price 21s. net.
LEWIS, H. K., AND CO., London.
Sexual Disabilities of Man and their Prevention and Treatment. By Arthur Cooper, Consulting Surgeon to the Westminster General Dispensary. Third edition, revised and enlarged. Price 6s. net.
LONGMANS, GREEN, AND CO., London.
Essentials of Chemical Physiology for the Use of Students. By W. D. Halliburton, M.D., LL.D., F.R.S. Ninth edition. Price 6s. net.
Right Hon. Sir Henry Enfield Roscoe, P.C., D.C.L., F.R.S.: A Biographical Sketch. By Sir Edward Thorpe, C.B., F.R.S. Price 7s. 6d. net.

Notes, Short Comments, and Answers to Correspondents.

ANGIO-NEUROTIC ŒDEMA.

To the Editor of THE LANCET.

SIR,—In answer to the very interesting and typical account of a case of this complaint by Major, R.A.M.C. (T.F.), in THE LANCET of Oct. 7th, and my appreciation of the difficulty in finding just the information one needs in a text-book, I may be forgiven if I go over ground in my reply with which he as a sufferer is more conversant than I am. While the exact pathology has not been made out, it is generally considered to be a vaso-motor neurosis with increased permeability of the blood-vessels and probably a deficiency of calcium salts in the blood, and while it often occurs in persons with a family history of the same complaint or allied complaints, such as erythema, purpura, Raynaud's disease and chilblains, mucous colitis, and neurasthenia; this family history is certainly not always the case. I have found by careful observation that from time to time in these cases a slight mitral or tricuspid murmur can be detected and that the blood pressure is almost always very low up to about 110 mm. of Hg for ages up to 45 or more, and that slight traces of albumin occur in the urine with fair regularity, and that at least 50 to 65 per cent. of the cases have gastro-intestinal disturbances. The following is an interesting case or set of cases:—

The brother of two patients of mine was invalided home from the East with "dysentery" attacks of hæmorrhage of the bowels. I had met him at a social function, and he had conversed freely with me about his complaint, but did not see him to speak to again, but heard of his progress. After being treated in a nursing home in London for some months for dysentery, he went to Bath, where a diagnosis of appendicitis was made and the appendix removed. Still he got no better and eventually he gave up treatment and took a holiday and went fishing. This did him a lot of good, and the last I heard of him was he was still much better. Personally, from his history I doubted both diagnoses and told the relatives so, on their asking me what I thought; and the bacteriologist who examined his feces, on my saying I did not think he had found either amoebic or bacillary dysentery said: "That was so." This was while the attacks were on.

Both his relations, my patients, had very low blood pressures, suffered from chilblains very badly, and one had been the subject of very severe attacks of angio-neurotic œdema for over 14 years before I treated the case. Had attacks of diarrhoea from time to time, and severe facial attacks coming on occasionally in the latter half of the nights, and looking as if "just out of the ring from prize-fighting," the features being entirely obliterated.

Sargent and Russell, in their excellent work, mention this complaint and its allied forms as a possibility that must never be lost sight of when investigating a case of acute abdominal symptoms. Most sufferers, I find, are anæmic, but some are ruddy and gouty. Apart from the constitutional tendency to it, consisting of low blood pressure and want of coagulability of the blood, anything which tends to produce neurasthenic conditions tends to bring this on, and therefore one should try to live under the best possible hygienic conditions, avoiding excesses of any kind, errors in dietary, and giving strict attention to the state of the bowels. An entire change often does good, as in the first case mentioned. Those foods which bring on urticaria certainly bring this on, and over-brewed tea is one, and a patient in whom I traced this and who took such tea daily was not discomforted by weak, freshly made, China tea. Again, tobacco is a very common source of trouble, and one patient I had who "never smoked more than three cigarettes a day" got great relief by abolishing smoking altogether. Apart from gastro-intestinal irritants and alcohol, gout, malaria, and syphilis certainly have been at the root of the trouble. One dose of salvarsan has completely stopped it in a case of the latter, and colchicum and quinine gave benefit in the former two sources of trouble.

In uncomplicated cases almost all the remedies used aim at the vaso-motor system, and it is interesting to note that both vaso-dilators and vaso-constrictors are prescribed, such as thyroïdin, nitroglycerine, pituitrin, adrenalin, the last two being specially useful in the attacks. As with everything else, if the cause can be found the treatment becomes easy, but I do not think any one irritant or article of diet can be said to be the sole cause of attacks. Nuts certainly act in some persons as a gastric irritant, and the fact of its "coming on three days after eating nuts," reminds me, some years ago when attending boys in a large private boarding school and when called in to attend cases of catarrhal jaundice, I always counted three days back in my mind and then mentioning the day of the week to the boy, said: "See, you had nuts on — day." After a little reflection, "cocoanuts" were mostly to blame, other times smaller nuts were owned up to. Strawberries, shell-fish, salmon, all in turn affect some. So far as my experience goes, I have found treating the patients for their anæmia with iron and arsenic; for the low

blood pressure, with tincture of strophanthus and nuxvomica with either alkalies or acids (as indicated by the case under consideration) for three weeks to six weeks at a time, one such course at least every three months, alternately with a course of calcium chloride gr. x. to xx. t.d.s. (or calcium lactate gr. xx. to xxx. t.d.s.) give the best results. Iron glycerophosphate and its calcium salt are excellent for a change.

It is interesting to note with regard to "Major's" experience that it has recently been pointed out that there is a deficiency of lime salts in the food supplied to troops in war time and that this accounts for the prevalence of enteric and dysentery; and certainly I believe one finds a deficiency of lime salts in all cases of abnormal permeability of the vessels, and the benefit of calcium is shown in cases of chilblains and "bleeders." The value of a course of high-frequency in these cases has been testified to by several writers, and during an attack I know of nothing that stops the pain so quickly as the high-frequency effluve, vacuum or brush, the former for face chiefly. During an attack brisk salines, hot alkaline baths, calcium lactate 3i., repeated in two hours if necessary, adrenalin, and pituitrin are the most useful. Specially useful as articles of diet are peas, beans, eggs, butter, and milk, all containing lime salts.

I am, Sir, yours faithfully,

G. HERBERT RUTTER.

Bournemouth, Oct. 14th, 1916.

THE REPATRIATION OF GERMAN CIVILIANS.

Lord Robert Cecil stated last week in the House of Commons that an arrangement had been made whereby all civilians over the age of 45 interned in Germany or the British Empire would be repatriated subject to the right of either Power to detain for military reasons not more than 20 persons. Doubtless the great majority of interned British subjects will desire to avail themselves of this opportunity. With regard to interned German subjects, where, as in many instances, they have resided for years in this country and have British-born wives, the case is different. We understand that the repatriation is not compulsory and that any interned civilian has the right of appeal against it, and if the appeal is allowed he remains interned. Political refugees are not forcibly repatriated. An appeal to remain from a German civilian with a British-born wife is readily granted. If the man goes and his wife remains behind she loses the Government grant. This now amounts to 11s. 6d. weekly in London and 9s. 3d. in the country, with 1s. 9d. extra for each child, which may be raised to 2s. 6d. at the discretion of the guardians.

A GOLD COAST DRUG.

THE Blue-book of the Gold Coast Colony for 1915 contains the following reference to a sample of bark of colonial growth sent to the Imperial Institute for investigation in the Scientific and Technical Research Department:—"A sample of bark was identified as probably that of *Zanthoxylum senegalense*, D.C. The bark, which has stimulant properties and is employed locally in rheumatic affections, intestinal troubles, and other diseases, has been previously examined by various investigators and found to contain a fixed oil, a neutral body, and two alkaloids, one of which (artarine) was found to be present to the extent of 0.4 per cent. This drug is described as producing muscular irritation and physiological disturbances similar to those induced by veratrine. The root bark of *Zanthoxylum senegalense* also yields a fixed oil which (probably on account of the artarine dissolved in it) tends to produce paralysis of the nervous system." Although there is not any regular demand for this bark in Europe, it is possible that if the alkaloid artarine could be shown to be clearly analogous to veratrine in physiological activity it might replace the latter in medicine. It was therefore wisely suggested that a quantity of the bark should be sent to the Imperial Institute for investigation.

THE PROLIFICITY OF OPPOSITE TWINS.

To the Editor of THE LANCET.

SIR,—In England it is a popular and widely-known belief that in the case of twins of opposite sexes the girl is invariably sterile. In fact, I was asked to consider my own marriage in this direction. However, my wife, though such a twin, has presented me with five healthy children.

I am, Sir, yours faithfully,

M.D.

Zürich, Oct. 25th, 1916.

X RAY APPARATUS AND ACCESSORIES.

WE have received an interesting catalogue (B) of X ray apparatus, tubes, and accessories from Messrs. R. Butt and Co., Ltd., of 147, Wardour-street, London, W. There are some admirable illustrations made from the actual X ray tubes and apparatus kept in stock. As improvements are made they are adopted, this firm being their own manufacturers. The descriptive matter is well written and contains some useful practical information.

ESPERANTO AND RUSSIAN.

MEMBERS of the Tutmonda Esperanta Kuracista Asocio (Universal Esperanto Medical Association), which has the names of several English medical men on its roll, will be interested in a letter which appears over the name of Mme. Sujadinoff in a Russian Supplement published recently by the *Times*. The study of Russian is now the subject of considerable attention, and the matter of transliteration has been much discussed in the public press, and the *Times* has now adopted a scheme, admittedly not perfect in all its details, for the Russian section of that paper. In the letter referred to above Mme. Sujadinoff points out that every letter of the Russian alphabet can be exactly represented by the use of Esperanto, illustrating her statement by a parallel comparison of the two alphabets. She also advises those who intend to learn Russian to facilitate their task by taking a preliminary course in Esperanto. That the one language should particularly help in the acquisition of the other is not at all remarkable, seeing that Dr. Zamenhof, the inventor of Esperanto, is a Russian.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

The following journals, magazines, &c., have been received:—*Medical Journal of South Africa*, *Annali di Medicina Navale e Coloniale*, *Midland Medical Journal*, *Proctologist and Gastroenterologist*, *Archives of Internal Medicine*, *Pacific Medical Journal*.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Papers:—Prof. W. M. Bayliss: Method of Raising a Low Arterial Pressure.—Mr. A. J. Brown and Mr. F. Tinker: Selective Permeability: the Absorption of Phenol and other Solutions by the Seeds of *Hordeum vulgare*.—Mr. C. Shearer: On the Toxic Action of Dilute Pure Sodium Chloride Solutions on the Meningococcus.—Mr. C. Shearer and Mr. H. W. Crowe: The Role of the Phagocyte in Cerebro-spinal Meningitis.—Mr. S. B. Schryver and Mary Hewlett: Investigation dealing with the Phenomena of "Clot" Formations. Part IV., The Diphasic Krovisic Action of Salts on the Chocolate gel. (communicated by Prof. V. H. Blackman).—Mr. Ingvar Jorgensen and Mr. F. Kidd: Some Photochemical Experiments with Pure Chlorophyll and their bearing on Theories of Carbon Assimilation (communicated by Prof. V. H. Blackman).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Thursday, Nov. 9th.

BALNEOLOGY AND CLIMATOLOGY (Hon. Secretaries—Chas. W. Buckley, J. Campbell McClure); at 5 P.M.

Discussion:

On "The Treatment by Physical Methods of Medical Disabilities Induced by War." In which Dr. Gordon, Sir John Collie, Major S. A. Smith, D.S.O., C.A.M.C., and Captain D. A. Clark, C.A.M.C., of the Special Canadian Hospital, Ramsgate, Major Black, Command Depot, Heaton Park, Captain Sawdon, C.A.M.C., Buxton Special Canadian Hospital, Dr. Humphris, Dr. King-Martyn, Bath, Dr. Nunneley, Brighton, and others will take part.

Members of other sections, especially of the MEDICAL, SURGICAL, NEUROLOGICAL, and ELECTRO-THERAPEUTICAL SECTIONS, are invited to be present.

N.B.—Will members please note that the meeting will be held at 5 P.M. (instead of 5.30.).

(At 7.30 P.M. the members will dine together at Pagan's Restaurant, Great Portland-street, W., and members may bring guests. Members who wish to dine are requested to send their names to Dr. J. Campbell McClure, 59, Harley-street, W.)

Friday, Nov. 10th.

CLINICAL (Hon. Secretaries—David Forsyth, T. P. Legg); at 8 P.M.

Cases:

Dr. H. Batty Shaw: Two Cases of Congenital Heart Disease showing Pulmonary Hypertrophic Osteoarthropathy.
Dr. F. Parkes Weber: (1) Progressive Spinal Muscular Atrophy (Duchenne-Aran) following Electric Shock; (2) Thrombo-angitis Obliterans (Non-syphilitic Arteritis Obliterans of the Hebrews) affecting Three Limbs; (3) Chorea Rhythmica in a Man.

RÖNTGEN SOCIETY, Institution of Electrical Engineers, Victoria Embankment, W.C.

TUESDAY.—8.15 P.M., General Meeting. Capt. C. T. Holland: Presidential Address.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY.—5 P.M., Horace Dobell Lecture:—Dr. H. R. Dean: The Mechanism of the Serum Reaction.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Course of Lectures on the Anatomy of the Human Body, for First-aid and Ambulance Students:—

MONDAY.—5 P.M., Lecture III.:—Prof. A. Keith: The Lungs and Trachea.

WEDNESDAY.—5 P.M., Lecture IV.:—Prof. A. Keith: Respiration.

FRIDAY.—5 P.M., Lecture V.:—Prof. A. Keith: The Brain.

Anatomical Preparations and Specimens used for illustration will be on exhibition in the Theatre from 3 P.M. to 5 P.M. on each lecture day, and between 10 A.M. and 5 P.M. in the Hall of the Museum on the following day.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Fernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynecological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Fernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whiphram); Gynecological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whiphram); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynecological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. H. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

CHADWICK PUBLIC LECTURES.

THURSDAY (at the Norwich Museum).—3 P.M., Dr. C. Porter: The Health of the Future Citizen—Lecture II., Babyhood and the Baby (illustrated with lantern slides).

FRIDAY (at the Lecture Room of the Royal Society of Arts, John-street, Adelphi, W.C.).—5.15 P.M., Professor William Stirling: Fatigue, and its Effects on Industry and Efficiency—Lecture III., Fatigue—a Universal Phenomenon of Life (illustrated with lantern slides).

INSTITUTE OF HYGIENE, 33-34, Devonshire-street (Harley-street), W.

TUESDAY.—4 P.M., Dr. J. W. H. Eyre: Venereal Virus and its Detection.

EDITORIAL NOTICES.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed exclusively "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners. Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and not to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

Subscribers abroad are particularly requested to note the rates of subscriptions given on page 6.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Stewart's Instruments.)

THE LANCET Office, Nov. 1st, 1913.

| Date. | Barometer reduced to Sea Level and 32° F. | Direction of Wind. | State of Sky. | Solar Radiation in Vacuum. | Maximum Temperature. | Minimum Temperature. | Wet Bulb. | Dry Bulb. | Remarks. |
|---------|---|--------------------|---------------|----------------------------|----------------------|----------------------|-----------|-----------|----------|
| Oct. 23 | 29.720 | S.W. | ... | 83 | 55 | 42 | 42 | 43 | Fine |
| " 27 | 29.384 | S. | 0.05 | 70 | 56 | 43 | 48 | 49 | Raining |
| " 28 | 29.330 | S.W. | 0.61 | 84 | 56 | 43 | 47 | 51 | Fine |
| " 29 | 29.280 | S.W. | ... | 71 | 55 | 45 | 49 | 51 | Cloudy |
| " 30 | 29.330 | S.W. | 0.19 | 89 | 61 | 50 | 51 | 52 | Raining |
| " 31 | 29.614 | S.W. | 0.26 | 91 | 57 | 48 | 46 | 48 | Cloudy |
| Nov. 1 | 29.880 | S.W. | 0.20 | 85 | 58 | 48 | 49 | 51 | Cloudy |

Communications, Letters, &c., have been received from—

A.—Dr. F. W. Andrewes, Lond.; Mr. R. J. Albany, Lond.; Messrs. Allen and Hanbury, Lond.; Mr. D. McCrae Aitken, Lond.; Dr. M. Afifi, Abassia; Association for Moral and Social Hygiene, Lond.; Hon. Secretary of, A. F.; Anglo-French Drug Co., Lond.; Anglo-American Pharmaceutical Co., Croydon; American Journal of Clinical Medicine, Chicago, Librarian of; Mr. E. Arnold, Lond.; Dr. Edwin L. Ash, Lond.
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The Bradshaw Lecture

EXOPHTHALMIC GOITRE.

Delivered before the Royal College of Physicians of London on Nov. 2nd, 1916,

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F.R.C.P. LOND.,

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FOR CONSUMPTION.

MR PRESIDENT AND GENTLEMEN,—I must first say how sensible I am of the honour which has been done me in conferring on me the privilege of delivering this lecture. The subject I have chosen for the lecture is one which has interested me for many years. This is not the first time that it has been selected for the Bradshaw Lecture, but I may perhaps succeed in presenting the subject from a different point of view and in bringing some of the problems connected with it up to date.

INCIDENCE OF THE DISEASE.

During the four years 1911-14 the number of deaths returned in England and Wales as resulting from exophthalmic goitre was 1558 for females and 155 for males. This gives a proportion of 10 females to 1 male. The age-distribution is given for the years 1912-14, and is as follows:—

| Under 5 | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 | 80-85 |
|---------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1 | 6 | 43 | 92 | 93 | 115 | 144 | 33 | 163 | 124 | 76 | 9 | 1 | 22 | 4 | 2 | |
| — | — | 4 | 13 | 7 | 7 | 14 | 12 | 15 | 12 | 16 | 9 | 7 | 1 | 1 | 1 | |

Totals: Females (first line)—1173; Males (second line)—119.

It will be seen from this that the number of deaths in each five-year age-period increases up to 35-40, and the largest number of deaths occurs between 45 and 50. More persons died from the disease over 65 than under 20.

I have collected the records of 438 cases, of which 263 were seen at St. Thomas's Hospital and 175 were private cases. There were 393 female cases and 45 male. Among these cases I have been careful to include no doubtful or incomplete cases. The age-distribution at the onset of the disease was as follows:—

A. Hospital Cases: 239 Females; 24 Males.

| Ages. | 10- | 15- | 20- | 25- | 30- | 35- | 40- | 45- | 50- | 55- | 60- | 65- | 70- |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Females ... | 2 | 50 | 71 | 44 | 29 | 19 | 15 | 4 | 3 | 1 | 1 | — | — |
| Males ... | 0 | 4 | 5 | 3 | 3 | 4 | 1 | 1 | 2 | 0 | 1 | — | — |

Among these cases there were 43 fatal cases, 39 females and 4 males, and the age-distribution at death of these was:

| 10- | 15- | 20- | 25- | 30- | 35- | 40- | 45- | 50- | 55- | 60- | 65- | 70- |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0 | 8 | 15 | 5 | 8 | 2 | 4 | — | 1 | — | — | — | — |

B. Private Cases: 154 Females; 21 Males.

| Ages. | 10- | 15- | 20- | 25- | 30- | 35- | 40- | 45- | 50- | 55- | 60- | 65- | 70- |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Females ... | 0 | 10 | 25 | 24 | 22 | 20 | 19 | 15 | 12 | 3 | 1 | — | 1 |
| Males ... | 0 | 0 | 5 | 5 | 4 | 1 | 3 | 3 | — | — | — | — | — |

It will be observed that in half of the hospital cases the disease had its onset before the age of 25 years, but of the private cases less than a quarter began before this age. The private cases are fairly evenly distributed over the various age-groups. It will be observed also that in more than half of the fatal hospital cases the age at death was under 25, a contrast to the Registrar-General's fatal cases, of which in only one-eighth was the age under 25.

The disease is very rare in childhood, and I have not yet seen a typical case under the age of 12. Among my 438 cases only 2 commenced under the age of 15. Out of No. 4863.

the 1290 fatal cases 6 were between 10 and 15, and 1 was reported under 5; the occurrence of the disease in children as young as two and a half years has, however, been recorded more than once.

RELATION OF MENTAL DISTURBANCE.

One of the remarkable features of the disease is the disproportion between the numbers of the two sexes which are affected, and while this is true of other diseases of the thyroid gland, such as myxœdema and cretinism, the difference is not in their case so strongly marked. We have seen above that the returns of the Registrar-General for fatal cases give a proportion of 10 females to 1 male. The clinical cases which I have collected show 393 females to 45 males, a proportion of 9 females to 1 male. It is a matter of universal experience in this country that the disease is comparatively very rare in the male sex, and I doubt the accuracy of statistics from other countries which give a much larger proportion of male cases. Among other diseases which fall with special weight on the female sex are chlorosis, chorea, and osteoarthritis. Chlorosis may be said to be entirely a female disease. Chorea affects between three and four times as many females as males, and, like exophthalmic goitre, often has as exciting cause some emotional disturbance. Its greater prevalence in the female sex, like that of exophthalmic goitre, is no doubt due to the greater inherent instability of the emotional nervous system. The greater incidence of osteoarthritis on the female sex is perhaps connected with pelvic disorders in the female, but it is interesting that the association of Graves's disease with, or its affinity to, osteoarthritis has been the subject of papers by Spender¹ and Llewellyn Jones.² I cannot say, however, that I have seen many instances of this association myself. The very unequal incidence of exophthalmic goitre in the two sexes is against the supposition that the disease depends on microbic or other infection.

The tendency of the disease to show itself in several members of the same family is well known. In 7 of my cases the mother was affected with the same disease, and in 3 cases the father. In 12 cases the disease affected one sister of the patient, in 3 cases two sisters, in 1 case three sisters, in 1 case one brother, in 2 cases two brothers, in 3 cases an aunt, in 4 cases, a cousin, in 1 case two cousins, in 1 case a grand-aunt, and in 3 cases a daughter. In 1 case a mother, in 1 case a daughter, and in 1 case a sister were affected with myxœdema. The family history has been better worked out among the private cases than among the hospital, for of these examples 34 occurred among the private cases and only 10 among the hospital cases.

The onset of the illness was preceded by some more or less severe mental shock or strain, worry or anxiety, in at least a third of the cases. A history of this was obtained in rather a larger proportion of the private cases than of the hospital cases. In 26 cases there was a history of the sudden death by illness or accident of a near relation or of the death of several near relations in a short time. The husband died suddenly in 6 cases, the father in 2. The father dropped down dead in the patient's presence or some near and dear relation, such as a brother or child, was killed in an accident or drowned or lost in a submarine. In one case a woman lost her husband, two children, and father and mother within a year; in another the son, father, and sister. There was anxiety over the serious illness of near relations, such as husband, father, mother, or child, in 10 cases. In 1 case it was looking after a husband with general paralysis of the insane for three years. There was a history of worry and strain in 18 cases; this was especially common in the male cases. The occupation in a number of cases was one involving special responsibility. One man was secretary to a waterworks company, and the waterworks broke down. Another was a schoolmaster and had an anxious time with the illness of one of his favourite pupils. Serious money losses were only given as a cause in one instance.

There was some kind of shock or fright, such as fire or alarm of fire, horse running away, gas explosion, in 20 cases. There was a history of preceding accident in 9 cases, such as a bicycle accident or a fall from a horse. In 7 cases the onset followed some more or less severe operation, and in 6 cases it followed prolonged or bad confinements. Some had more than their

¹ Brit. Med. Jour., 1891, vol. i, pp. 1169-71.

² Ibid., 1903, vol. i, pp. 1015-17.

share of trouble. One woman had been ill-used by a drunken husband; her mother had suddenly died in her presence, and she had had a fall downstairs followed by a miscarriage.

Examples of Rapid Onset after Mental Disturbance.

As a rule the symptoms of the disease developed gradually after the shock or strain, but in some cases the symptoms very quickly followed the mental disturbance, and of this rapid mode of onset the following are two typical examples.

1.—A mechanical engineer aged 23, who had always enjoyed good health, went to attest on Dec. 11th, 1915, with the object of joining the Royal Naval Air Service, and told the recruiting officer that that was his desire. He passed the doctor successfully and was told he was "A.1." He was then informed that he was now a soldier in the Army. He was very angry at this and went home in a highly excited condition, but soon returned to the recruiting station to try to get transferred into the Air Service. He was told it could not be done. He had no sleep all night and was still in an excited state next day. As the days went on he altered very much in temperament and became cantankerous and quarrelsome, even disputing with people in church. His heart would beat night and day as if he had been running a race, and he developed constant fidgety movements and there was continual trembling of the body. He rapidly became thinner, in spite of an enormous appetite and a great craving for meat. His eyes, too, soon became very prominent and the neck swollen.

I saw the patient about three months after the onset. It was then a typical case of Graves's disease. The most striking feature was very tumultuous and rapid action of the heart, but there were also marked tremor of the hands, general but moderate enlargement of the thyroid, and moderate proptosis. He seemed at this time to be improving, for the eyes were said to be less prominent and less "wild-looking" than they were soon after the upset.

2.—A man, aged 31, a policeman, was brutally attacked by the friends of a culprit whom he was trying to arrest. He was knocked down and kicked in the abdomen and badly bruised about the legs and ankles. He was confined entirely to bed for a week, and eight weeks later, as he was still ill, he was admitted to my ward. Since the attack he had become very nervous, trembled on the slightest excitement, and also suffered from fits of giddiness in which he with difficulty saved himself from falling. He had lost nearly a stone in weight and had not recovered his strength. When first admitted there was only slight exophthalmos. The pulse at rest was 84 but readily quickened to about 100, and there was some tremor of the hands. The thyroid gland was not appreciably enlarged at this time, but three weeks later there was palpable and visible general enlargement. The exophthalmos was marked, the eyes were staring, and the conjunctivæ glistening. The pulse-rate averaged 90 to 100.

Effects of Sorrow and Grief, Anxiety, and Fear.

The effect of profound emotional disturbance in producing exophthalmic goitre is of very special interest in the troubled and distressful times we are now passing through. Every day brings fresh sorrow to thousands. Grief and anxiety are weighing down the hearts of countless mothers, wives, and sisters. While the women of this country have shown a fortitude and endurance beyond all praise it cannot but happen that the terrible ordeal which they have gone through will produce in some more than a passing effect on the emotional nervous system. I think we shall undoubtedly see in the near future an increased number of cases of exophthalmic goitre.

It has been said that anger is a short madness and fright may be said to be a short attack of exophthalmic goitre. The effects of intense fear, the palpitating heart, the trembling, the starting forward of the eyes, the sweating of the body have been pictured for us by great poets as well as by distinguished naturalists. The ghost in *Hamlet* says:

"I could a tale unfold, whose lightest word
Would harrow up thy soul; freeze thy young blood;
Make thy two eyes, like stars, start from their spheres."

In the great Hebrew epic Eliphaz the Temanite says:

"Fear came upon me, and trembling, which made all my bones to shake. The hair of my flesh stood up."

And Elihu says:

"At this also my heart trembleth and is moved out of his place."

The Psalmist plaintively laments:

"I am feeble and sore broken. I have roared by reason of the disquietness of my heart. My heart panteth, my strength faileth me."

"My heart is sore pained within me. Fearfulness and trembling are come upon me and horror hath overwhelmed me."

In these passages we see a reference to the protrusion of the eyes, the trembling, the palpitating, and the loss of strength which make up the picture of exophthalmic goitre.

The effect of emotional disturbance in causing a swelling of the thyroid gland is not so well known. The very existence of the thyroid gland is unknown to the laity. But there is, I think, a reference to the swelling of the thyroid in the words *anguish*, *anxiety*, *anger*, which all imply a feeling of compression of the throat. Perhaps the popular consciousness of a lump in the throat or of the heart being in one's mouth is really due to a temporary fullness of the thyroid. That sometimes the neck in the adult female may become temporarily swollen under excitement was known to the ancients.

But while emotional disturbance appears to be the starting point in a considerable number of cases, it must be admitted that no such cause can be traced in many cases of the disease. The disease may come on slowly or rapidly, and sometimes the protrusion of the eyes, sometimes the swollen neck, sometimes the palpitating, and sometimes the nervousness is the first intimation to the patient or the friends that anything is amiss. From what we know of the causation of the disease we recognise that prevention is beyond our power. As far as possible persons in whom there is a family history of the disease should steer clear of occupations involving more than ordinary responsibility, worry, or anxiety.

PERSISTENT THYMUS GLAND.—CONDITION OF THYROID.

During the last 36 years there have been exactly 36 post-mortem examinations at St. Thomas's Hospital on cases of exophthalmic goitre which gives an average of one a year, but 28 of these have occurred during the last 16 years and only 8 in the preceding 20 years.

The most constant feature next to the enlargement of the thyroid gland is the presence in most of the cases of a persistent or enlarged thymus gland.

The presence of the thymus was noted in 26 cases, and it was described as greatly enlarged in 6 cases, large or hypertrophied in 16, and persistent but not large in 4. In 2 more a little thymic tissue was found in the situation of the gland, and in 1 the atrophied remains of the thymus were noted. In 7 cases out of 36 there is no mention of the thymus, but it is possible that in some of these cases it may have been present although not found. The persistence of the thymus in exophthalmic goitre has long been recognised. The weight of the persistent thymus varied from 1½ to 4½ ounces, and its length was sometimes 4 or 5 inches. The gland in some cases was noted as forming a prominent fleshy mass above the heart or behind the manubrium, or as spreading down in a thick mass to the pericardium, or as stretching down and spread out over the pericardium, or as mingling with the fat of the anterior mediastinum. On microscopical examination Hassall's corpuscles were generally numerous, sometimes of great size, and in all stages of degeneration. Sometimes eosinophiles were numerous. It was noted in some cases that although the gland was large it showed the histological changes not of actively enlarged gland, but rather those of degeneration or some degree of fibrosis was present, but in other instances it was remarked that the gland would be considered normal for a child. In the 3 cases where only an atrophied remnant or a small quantity of glandular tissue was found, in 2, aged 23 and 36, the disease had lasted four years at the time of death, and in the other the disease had started at the age of 20 and gone on with relapses until the age of 29. The oldest subject with a persistent thymus was a woman aged 41. The oldest subject with a large thymus was a woman aged 33. Fourteen of the subjects with a large thymus were between the ages of 18 and 24 and 7 between the ages of 29 and 33.

There were only four post-mortem examinations on persons over 40, and in only one of these was a persistent thymus noted. Professor W. S. Halsted has recorded a case where a woman, aged 47, who died 30 hours after a thyroidectomy was found to have a large thymus extending from the top of the manubrium to, and partly covering, the auricles of the heart.

What part the persistence of the thymus gland plays in the disease is at present uncertain. The possible relationship of exophthalmic goitre to the condition known as

lymphatism or status lymphaticus has to be considered. In this condition, as is well known, there is a dangerous state of weakness of the heart and lowering of the power of resistance. Many cases have been reported of death from chloroform or other anæsthetic, and fatal syncope may occur from some slight cause. It is significant that a persistent thymus is found in so large a proportion of the cases of exophthalmic goitre which succumb under operation. The status lymphaticus, however, is a condition which is more frequent in males than females in the proportion of about 10 to 7, and if persons with the status lymphaticus are specially predisposed to exophthalmic goitre one would expect the number of male cases to be greater than it is in the latter disease.

In 10 cases the thyroid gland was described as much enlarged, weighing from 4½ to 7 ounces. In 14 cases it was simply said to be large. It was slightly or moderately enlarged in 5 cases. In 4 cases there is no special remark about its size. In 2 cases it was described as surrounding and constricting trachea and œsophagus. In one of these cases the lobes met behind, the trachea was compressed laterally, the cartilages being softened and in places almost destroyed. In another case there was also lateral compression of the trachea, and in a case in which the right lobe had been surgically removed the greatly enlarged left lobe lapped round the pharynx. In 2 cases a large number of cysts were present varying in size, and the surface on this account was irregular. The microscopical appearances were in most cases those which are considered typical of Graves's disease and which are fully described elsewhere.

In 3 of the fatal cases the duration of the disease was less than six months, in 10 it was from six months to one year, in 12 from one to two years, in 8 from two to six years, and in 6 over six years. In more than half of the cases the duration was less than 18 months.

COURSE OF THE DISEASE.

With regard to the symptoms of exophthalmic goitre these have been so often and so well described that I need not dwell on them now. I may briefly refer to the blood picture which is fairly constant in typical cases of the disease and may be a help in diagnosis in doubtful cases. Nothing abnormal is usually observed in the case of the red corpuscles, but with regard to the white cells leucopenia is the rule with a relative lymphocytosis. There is no absolute increase in lymphocytes; it is the deficiency of the polynuclears which brings about the leucopenia. Such a blood picture is, however, by no means peculiar to exophthalmic goitre, but is also found in myxœdema, acromegaly, and, in fact, in any disease of the glands of internal secretion.

The attention which has been directed to the rôle played by the thymus in exophthalmic goitre has prompted the search for functional tests which would reveal the presence of overactivity on the part of the thyroid gland. Such tests, if of proved value, would assist in the diagnosis of incomplete, doubtful, or early cases of exophthalmic goitre. All except two are too complicated to be of practical value. 1. Claude Baudouin and Porak³ have investigated the action of hypodermic injection of extract of the posterior lobe of the hypophysis. In the case of normal subjects the pulse becomes accelerated within a few minutes after the injection and returns to normal in about twenty minutes. In exophthalmic goitre, on the other hand, the injection quickly slows the pulse, although only to a slight extent, the effect passing off in 7 or 8 minutes. 2. Loewi's⁴ adrenalin test is the dilatation of the pupil which follows the installation of 1-1000 solution of adrenalin into the conjunctiva in exophthalmic goitre. It has also been found positive in diabetes.

It has always seemed to me a somewhat remarkable feature of exophthalmic goitre that the severity of the illness does not bear any constant relation to the size of the thyroid. Some of the cases with a much enlarged thyroid are not of a severe type, while others in which the thyroid is scarcely or not at all palpable are of quite an acute type. I have seen several cases with extreme exophthalmos, marked nervousness, wasting, and tachycardia without thyroid enlargement. One must take it that size is not a measure of activity. In 2 cases which terminated fatally there was rapid diminution in the size of the thyroid during the few weeks preceding death.

Both these cases were also remarkable for the degree of general body wasting which took place. In one case the patient weighed 8 st. 9 lb. on admission to the hospital and ten weeks later, shortly before death, she weighed only 5 st. 6 lb. Vomiting was a marked feature of this case. Although the thyroid in these cases much diminished in size, it was found at the post-mortem to be still larger than normal. One was described as twice as large as normal, the other slightly enlarged and weighing 1½ ounces.

The degree of wasting which sometimes takes place in exophthalmic goitre is extraordinary. I could give many illustrations of this. Wasting is generally an unfavourable symptom, while gain of weight is favourable, but even extreme degrees of emaciation may be recovered from, of which the following is a typical example.

A woman age 41 was admitted to hospital in 1907 with 11 months' history of illness following influenza. She was very emaciated, weighing 4 st. 5 lb., her ordinary weight being 6 st. 13 lb. dressed. For nine months she had been unable to walk. She had distinct proptosis, slight swelling of thyroid, tremor, and rapid cardiac action. She had been delirious at night for five months before admission, and she had incontinence of urine and bacilluria with some pyrexia. She continued to lose weight for the first four weeks, and her weight fell to 3 st. 12 lb. She was given rotagen 3ss. b.d. for six weeks and then 3i 4tis horis for four weeks more. She remained in hospital 7½ months, and gradually improved. On leaving, her weight was 6 st., but her pulse was still quick.

The long duration and very slow progress in some cases is illustrated by the following examples:—

1. The patient, a married woman, when I first saw her was aged 50. She was complaining of palpitation and tiredness. She had a moderate goitre and a moderate degree of proptosis. Her pulse-rate was 120. She said the prominence of the eyes had gradually been coming on for ten years. Six or seven years ago she began to feel a throbbing in the throat, but she was not aware of the presence of a goitre until four years ago. She was thin and she said she had fallen away very much. She remained under treatment for six months without much change. I saw her next nine years later at her own house. She was now 59. She had a high degree of exophthalmos with very wide palpebral fissure. She was in a state of extreme nervousness with much tremor. She was extremely thin. Her heart was rapid and irregular. The thyroid enlargement was moderate and general and the veins over it were enlarged and pulsating.

2. A woman at the age of 22 developed a swelling in her neck and her eyes became prominent. The swelling gradually increased, and she suffered from trembling and palpitation, and she attended the Brompton Hospital as an out-patient for some years. At the age of 42 there was still exophthalmos and slight enlargement of the thyroid, and there was much visible pulsation in the vessels of the neck.

3. A man at the age of 22 developed typical symptoms of exophthalmic goitre. Previous to onset he was fireman to locomotive engine. His illness never incapacitated him from work, and he had no treatment. At the age of 39 he had still some exophthalmos and thyroid enlargement. He died shortly after from acute diarrhoea.

On the other hand, we meet with cases which run a rapid course and terminate fatally in from six weeks to three months from the onset. Of this rapid course the following is an example.

Rapidly fatal case.—A married woman aged 31. On April 17th, 1916, she received a shock—the news of the death of her husband, killed at the front. She suffered from trembling and palpitation and dryness of the mouth and throat. She became very nervous, started at the least sound, and had a feeling of pins and needles all over. She was admitted to St. Thomas's Hospital a month later. There was marked tremor of the face and hands and rapid cardiac action, usually 120. She was very thin and weighed only 5 st. 8 lb. Exophthalmos was not obvious, and neither von Graefe's nor Stellwag's sign was present. There was no obvious enlargement of the thyroid gland at first, but later a slight swelling was evident. She lost 7 lb. more in weight in a month. Then she became drowsy. Sugar, acetone, and diacetic acid appeared in the urine, and she died on June 30th, two and a half months after the onset of her illness. At the post-mortem examination the thymus was found to be much enlarged, spreading downwards in a thick mass to the pericardium. Both lobes of the thyroid were enlarged. The right side of the heart was dilated.

There is reason to believe that in about 25 per cent. of the cases death results from the disease, and that under ordinary medical treatment in about 50 per cent. more or less complete recovery will eventually take place, while in the remainder the disease continues in a chronic form during life.

³ Bull. et Mem. Soc. Méd. d. Hôp. de Paris, 1914, xxx., No. 22.

⁴ Wien. klin. Wochenschr., xx., 1907, 782.

Most of the recoveries are met with among the slighter cases, and among the more severe cases it is certainly very rare to attain what can be admitted to be a complete recovery. Let us hope that improved methods of treatment will bring us better results among the more serious cases.

TREATMENT.

As I have said elsewhere, the natural course of the disease is so variable that there is great difficulty in correctly interpreting the effects of treatment. Under similar conditions as to treatment some cases improve rapidly, some remain stationary for a long time; others fluctuate or steadily lose ground and end fatally. I think I may safely say that I have made a trial of every known remedy. Of drugs, bromides are certainly useful where the nervous symptoms predominate. Belladonna seems to quiet the heart and soothe the nervous system. Opium is useful when there is looseness of the bowels. Phosphates and calcium salts seem to benefit when there is progressive loss of weight. I have tried all the organic preparations—thymus, pituitary, suprarenal, thyroid—separately and in combination, and have not found any special virtue in any of them. I am quite unable to endorse the eulogy of the late Dr. George Gibson³ as to the effects of suprarenal extract: "The rate of the pulse is reduced, the protrusion of the eyeballs disappears, the thyroid gland diminishes, the tremor along with every other nervous symptom vanishes, and the patient is restored to health in a way that we never see under any other method of treatment."

The attempts which have been made to obtain a useful remedy from the serum or milk of thyroidectomised sheep or goats have ended in failure. For a time, through the kindness of Mr. Walter Edmunds, I had an ample supply of milk from goats which had been deprived of their thyroid glands. No obvious benefit resulted from the treatment. The serum prepared by Merck and the substance called thyroid-ectin are quite inert. The powder called rodagen seemed to be beneficial when given in large doses in certain cases where wasting was a marked feature, but I think it is probable that casein would have had the same effect.

The general principles of treatment of the disease are well understood and agreed upon. But there are two important methods of treatment which are still *sub judice* and which, I think, specially require discussion at the present time. These are X ray treatment and operative treatment.

X RAY TREATMENT.

The effect of X ray exposures in reducing splenic enlargements, especially in cases of myelæmia, led one to hope that similar results might follow their application to the goitre of Graves's disease. It is many years since I first employed it, and its use has probably occurred to many independently. But although I have made use of it for many years and in many cases, it is only recently that I have had the most convincing evidence of the effectiveness of the treatment. I may say that I have gone on using the treatment not because I had met with any very striking success in my own practice, but because I was favourably impressed by the reports of benefit from X ray treatment published in the medical journals from time to time. I not only tried the effect of X ray exposures over the thyroid, but also over the thymus, and I was induced to try this because I was not satisfied with the results of X ray thyroid treatment. In 1909 I treated a number of cases in this way. Whether the treatment was employed over too short a time or not I do not know, but I obtained no very conclusive results at that time.

I shall give a few illustrative examples, showing sometimes improvement, at other times no obvious effect, and then I shall relate the most remarkable case which I have as yet met with.

1. A single woman aged 18 was treated in St. Thomas's Hospital from July, 1909, to February, 1910. It was a typical case and there was a six months' history. X ray treatment to the thyroid was started on August 20th, and she had applications of $\frac{1}{2}$ pastille through boiler-felt filter for 10 minutes twice a week until Oct. 2nd. On Nov. 20th X ray treatment over the thymus was commenced. She had applications twice a week for three weeks, then once a week for three weeks, and again twice a week for three weeks. On discharge her eyes were less prominent, the goitre was smaller, and she had increased a few pounds in weight, but her pulse was 104, the same as on admission.

2. A single woman, 18, telephone operator, admitted to hospital in June, 1906, and remained until February, 1907. There was a five months' history. She had lost a great deal of flesh, and weighed on admission only 4 st. 9½ lb., her height being 5 ft. 2 in. It was a typical case, with marked proptosis, considerable enlargement of the thyroid, and a pulse-rate of 120 to 128. During the first month she took very little food and occasionally vomited, and her weight fell to 4 st. 2 lb. She started X ray treatment on July 28th twice weekly, and her weight slowly increased until it reached 5 st. 6½ lb. in November and 6 st. 10 lb. in February, 1907. The goitre, however, gradually increased in size and the neck, which was 12 in. in circumference in June, was 13½ in. in November and 14½ in. in January. Although her nutrition and general condition much improved, her pulse-rate continued rapid—112. There is no record how many X ray applications were made, but they were numerous, and a very extensive freckling of the skin was produced. She was kept under observation during 1907, and during that time her pulse-rate was always quick—146 to 164. She was readmitted March 2nd, 1908, and her condition was much the same as when she left a year previously, except that her goitre had recently become larger, the neck measuring 15½ in., and the tremor was more marked. She was in the hospital for nine months, but there was no further improvement except gain in weight, her weight in November, 1908, being 7 st. 10 lb. In November, 1910, there was still considerable thyroid enlargement, the proptosis was still marked, there was a good deal of tremor, and the pulse-rate was 150.

3. A single woman, aged 25, milliner, came to St. Thomas's Hospital in August, 1908, with typical symptoms of Graves's disease of one month's duration. Under treatment she gained some weight, but the goitre increased in size and became very large, the pulse continued quick, 120 to 136, and the proptosis became more marked. In January, 1910, the exophthalmos became extreme and the right eyeball was twice dislocated but easily went back. In February, 1910, X ray treatment was started and was continued twice a week for over six months. At first her weight as well as the thyroid enlargement diminished, but at the end of September her weight had increased nearly 2 st. It was noted on Nov. 18th, 1910, that the patient's condition had much improved. She was able to be back at her business. No palpable enlargement of thyroid now. Proptosis decidedly less. Hands quite steady when held out. Pulse-rate 108, as compared with 120 at first.

4. A single woman, aged 32, was treated in St. Thomas's Hospital from February to June, 1910. There was a two years' history. On admission there was a high degree of exophthalmos. The pulse was 120. No enlargement of the thyroid was made out at this or at any other time. She lost a stone in weight during the first six weeks she was in the hospital, but subsequently regained it. She was treated with X rays over the thymus from March 16th to May 31st, and had 12 applications altogether. The most marked improvement was in the pulse-rate, which for the first six weeks was 100 to 120, but for ten days before discharge averaged 80.

In the following two cases of rapid progress X ray treatment appeared to be powerless to influence the march of the disease.

5. A woman, aged 19, was admitted in May this year with twelve months' history of exophthalmic goitre of gradual onset after some trouble or shock. It was a typical case, with considerable thyroid enlargement and the marked nervous symptoms. She received three X ray treatments at a week's interval. She, however, rapidly lost weight at the rate of 12 lb. in a fortnight. The tremor increased. She had to be hand-fed. Her mind wandered and she died from cardiac failure. A large thymus was found at the necropsy.

6. A young woman, aged 20, married, was admitted to hospital in September, 1916. About three months before she had some trouble and anxiety, but she was not really ill until about two weeks before her admission, when she felt nervous, depressed, and tired. There were slight exophthalmos, moderate thyroid enlargement, a pulse-rate of 120, and fine tremors of the hands. She had three X ray treatments in three weeks, but she rapidly lost weight to the extent of 19½ lb. Her pulse-rate in the fourth week became more rapid, her temperature rose, she rapidly became weaker, and she died four weeks after her admission. The chief feature of the post-mortem examination was the presence of a very large fleshy-looking thymus.

X RAYS CONVERT EXOPHTHALMIC GOITRE INTO MYXŒDEMA WHICH IS CURED BY THYROID TREATMENT.

The following case is of great importance and interest, showing as it does that a case of exophthalmic goitre can be converted by means of X rays into a case of myxœdema and then by means of thyroid treatment can be restored to a normal state. The total number of treatments in this case amounted to 36 and extended over a period of four years. It seems to me that a possible reason why X ray treatment

has not hitherto yielded better and more convincing results is that it has not been persevered with sufficiently long. In many cases the treatment has been given up after a comparatively short course because no very obvious improvement had taken place.

The patient, aged 23, came under treatment in March, 1912. For 18 months she had had enlargement of the thyroid and for 14 months exophthalmos. On admission to the hospital the thyroid gland was uniformly and considerably enlarged, the circumference of the neck being 14½ inches. There was a moderate degree of exophthalmos. The pulse-rate varied between 104 and 136. The blood pressure was 156 mm. and the blood picture was typical. There was well-marked tremor. She left at the end of June with general improvement. The enlargement of the thyroid was considerably diminished, the neck measuring 2½ inches less in circumference than it did on admission. She had one application of X rays in June before she left. After leaving the hospital she gained a stone in weight, but her thyroid enlarged again, and at the beginning of November her neck had increased 1½ inches. Her pulse-rate continued rapid, 120 to 140. In November and December, 1912, and in January and February, 1913, she had nine applications of X rays without any diminution in the size of the thyroid, which, if anything, got a little larger. Up to the beginning of February she was increasing in weight, and then she was 25 lb. more than when she left the hospital. During the next four months she lost weight steadily to the amount of 18 lb. She remained in about the same condition until March, 1914, but her general health was fairly good and she was able to be at her work. In March, 1914, she resumed X ray treatment, and I lost sight of her for a time. She then weighed 9 st. 12 lb. She had X ray treatment on the following dates during 1914: March 9th, 16th, 23rd; April 20th; May 11th, 18th, 25th; June 8th, 22nd, 29th; July 20th; August 10th, 24th; Sept. 7th; Oct. 19th; Nov. 16th, 30th; and Dec. 29th—18 applications in all. During 1915 she had treatment on Jan. 26th, March 23rd, April 29th, June 8th, July 6th, August 9th, Oct. 12th, and Nov. 9th—eight applications.

The patient returned to see me in March, 1916, with the typical appearance of myxœdema. She stated that she had been getting stouter for about six months. Her face had become puffy, her legs thick, and her hands large. She had felt the cold very much during the winter and her limbs were scarcely ever warm. Her hair was very dry and was coming out very much. Her voice was getting very thick and hoarse, and her speech was slow and monotonous. Her pulse was 80 and her weight was 10 st. 12 lb. No thyroid enlargement could be made out. She was put on thyroid tablets, 1 grain (representing 6 grains of gland) twice a day. In two months all signs of myxœdema had disappeared, and her weight was reduced to 9 st. 6 lb. She continued the thyroid tablets, and when seen in July, 1916, the only remaining sign of exophthalmic goitre was that the eyes were very slightly prominent, but neither Stellwag's nor von Graefe's sign was present. There was no thyroid enlargement. Her heart was going quietly at the rate of 72. She was doing her work as a general servant, and was quite equal for it. I saw her again on Oct. 24th, 1916, and her condition remained normal except that she had to continue the thyroid tablets. Her blood picture was then quite normal.

I have never before seen such a complete disappearance of the signs and symptoms of well-marked exophthalmic goitre as has taken place in the above case. I think one is justified in ascribing the cure to the prolonged X ray treatment.

Views on Treatment with X Rays.

My present views on X ray treatment are: It may prove to be far the best means of treatment at our command. It must be applied in no half-hearted way. It must be persevered with and in many cases continued for a long period of time. It is most likely to prove beneficial in cases where the thyroid enlargement is moderate and the patient is not so seriously ill as to necessitate confinement to bed. I think it may prove valuable in bringing about a retrogression of the remaining thyroid after a hemithyroidectomy. I have not at present sufficient evidence to speak of its usefulness where the goitre is a very large one. It has seemed to fail, as other remedies do, in cases of a severe type and rapid course. The trend of present experience in respect of X ray treatment is decidedly in favour of its further trial, and I would draw attention to a few recent important references to its effects.

Professor Halsted⁷ has recently been making trial of X ray treatment of the thymus which I have mentioned I employed seven years ago without any very striking results.

But Professor Halsted has used it in cases where he had previously removed most of the thyroid and the resulting improvement was not satisfactory. In these cases he thinks the X ray treatment has been very satisfactory.

Professor George Murray⁸ has stated that treatment with X rays has in some of his cases proved to be of great value. The gland gradually diminishes in size and the symptoms subside. These changes are, however, slow in development, so that the full effect of the treatment is not obtained until some months have elapsed. Fifteen to twenty weekly treatments have brought about great improvement or practical recovery in some cases. In others only slight improvement has followed similar treatment. He thinks it is worth while to persevere with X ray treatment for as long as 12 months if satisfactory progress is being made.

Dr. Florence Stoney⁹ has written enthusiastically of the effects of X ray treatment. Of 48 cases treated (of which 22 had no exophthalmos) 14 (of which 5 had no exophthalmos) were cured. The average number of treatments of the cases cured was 31, the smallest was 10, and the largest 50. She gives a small dose each time about seven to ten minutes. In acute cases she gives it twice a week for a month, then stops it for a fortnight. In chronic cases one treatment weekly suffices, but it must be continued in severe cases for six to eight months. Early cases are cured with a few treatments. Long treatment is only required where the case is very acute, where rest is unattainable, or where the case is of old standing.

Of the effects of radium treatment I have no personal experience to relate. Reports which have been published by D. Turner¹⁰ and others seem to show that they are very similar to those of X rays, and if this is confirmed radium treatment would be a valuable addition to our armamentarium. It is obvious that radium treatment might be employed in cases where X ray treatment was unobtainable.

SURGICAL TREATMENT.

Surgical methods of treatment of exophthalmic goitre have long been advocated and employed with the object of bringing about a more certain, a more lasting, and a speedier cure than can be obtained by other means. In the first cases in which partial thyroidectomy was performed the operation was done to relieve dyspnoea as in a case operated on by Lord Lister in 1877. It was found that not only was the dyspnoea relieved but all the symptoms were alleviated.

If the controlling and fundamental agent in keeping up the symptoms of the disease was the hyperplasia and over-activity of the thyroid gland, it seemed the most hopeful and rational means of treatment was to attempt to control that, and to the surgeon the use of the knife seemed the most natural method of dealing with it. He could cut away as much of the gland as was superfluous and leave the patient with just as much thyroid gland as was necessary for health. The theory seemed attractive; how did it work out in practice? Unfortunately, it was found that the operation had special dangers of its own, and while partial thyroidectomy in ordinary goitre was a comparatively safe operation, in exophthalmic cases it not infrequently proved fatal. The earlier statistics showed a death-rate of over 12 per cent. for the whole number, and among the severe cases it was as high as 22 per cent. Later statistics show better results, however.

My own experience of operation in cases of exophthalmic goitre has, on the whole, been very unfavourable. In several chronic cases in which the tumour was large partial thyroidectomy has been successfully carried out with relief to the patient, but although I have seen patients who have been benefited I have not seen any case that I could say was actually cured.

The risks attending thyroidectomy being considerable, surgeons have introduced modifications of the operation to diminish the danger. Ligature of the thyroid arteries was done as a preliminary in many cases, and according to Kocher it was found that ligature of one superior thyroid artery brought about a slight amelioration, which was increased by ligaturing both, and still more by ligaturing the inferior thyroid on one side in addition. So it came about that ligature of the arteries was frequently done as a preliminary to hemithyroidectomy and sometimes as a curative method in itself.

⁷ THE LANCET, 1913, vol. ii., p. 202.

⁸ Brit. Med. Jour., 1912, vol. ii., pp. 476-79.

⁹ THE LANCET, 1913, vol. ii., p. 924.

¹⁰ Johns Hopkins Hosp. Bulletin, vol. xxvi., pp. 55-57.

If I now give a few details of my experience of the results of operative treatment at St. Thomas's Hospital during the last ten years, it will be understood why I have not hitherto been of opinion that it is the most promising or the safest means of treatment at our disposal. The first three cases were very discouraging.

1. In 1905 a woman aged 21, who had had symptoms of Graves's disease for two and a half years, was admitted under my care. She was a typical case. She remained some months in the hospital with little change in her general condition. Then it was decided to give her the chance of benefit by operation. Right hemithyroidectomy was performed under general anaesthesia. She stood the operation well, but she became restless and delirious and later comatose, and died 26 hours after the operation with great rapidity of pulse and respiration. A large thymus was found to be present.

2. In 1906 a girl aged 16, who had had symptoms of Graves's disease for three months and was not improving, was operated on. Right hemithyroidectomy was performed under general (ether) anaesthesia. The operation was difficult. The patient bore the anaesthetic badly, having two attacks of dyspnoea during its administration, and, like the other case, after the operation became delirious and collapsed, and died comatose after seven hours. No post-mortem examination was performed.

3. In 1908 a woman aged 43, with eight years' history of Graves's disease and with marked exophthalmic goitre and general excitability, was admitted to the hospital. Partial thyroidectomy was performed under general anaesthesia. She died eight days later with septic bronchopneumonia. The thymus was not recognised.

These three fatal cases in succession were not encouraging, but in 1909 two cases were operated on, one ligature of arteries, the other hemithyroidectomy, and both recovered. In 1910 7 patients were operated on with one death. Of these, 2 were cases of ligature only and 5 were thyroidectomies with or without ligature. The fatal case was a man aged 19, who for five months had had symptoms of Graves's disease, and these were typical on admission to the hospital. He was operated on after he had been in the hospital two months. He died under a general (C.E.) anaesthetic during thyroidectomy. No post-mortem examination was made.

In 1911 6 cases were operated on, all ligature of the superior thyroid arteries, and of these 3 proved fatal—two a few hours after the operation, the third after an interval of 14 days. In all these three cases there was a very large thymus, and the thyroid was also much enlarged. The ages of the patients were 18, 21, and 30.

In 1912 only one case was operated on, and that proved fatal. The case was that of a woman aged 29 with an 18 months' history. There was a high degree of exophthalmos and a moderate goitre. She was losing weight, 9 lb. being lost in the five weeks preceding operation. Both superior thyroids were ligatured, and the isthmus was excised under hedonal anaesthesia. She died the following day after tachycardia, pyrexia, and rapid respiration. There is no mention of thymus in the post-mortem report.

In 1913 6 cases were operated on, 1 ligature of arteries, which recovered, and 5 hemithyroidectomy, 2 of which proved fatal. Of the fatal cases 1 was a woman aged 33 with an eight months' history of Graves's disease. There was much restlessness and general nervousness. The goitre was a large one. The right lobe was removed under hedonal anaesthesia, and death ensued 10 hours after the operation. The thymus was found at the post-mortem examination to be much enlarged. The other fatal case was a woman aged 23 with 12 months' history, the symptoms coming on after fright. She improved under medical treatment and gained a stone in weight. There was marked exophthalmos and the thyroid was much enlarged. She died under anaesthesia. At the post-mortem examination the thymus was found to be enlarged, although repeated X ray examination had shown no sign of this.

In 1914 3 cases were operated on, 2 ligature of arteries, which recovered, and 1 left hemithyroidectomy, which proved fatal four hours after the operation. The fatal case was that of a woman aged 18. A persistent thymus was found at the post-mortem examination.

In 1915 3 cases were operated on—2 ligature of arteries which recovered and 1 hemithyroidectomy which proved fatal 10 hours after the operation. The fatal case was that of a woman, aged 35, with a three years' history. She never recovered consciousness after operation. At the necropsy no evidence of lymphatism was found.

In 1916 2 cases have been operated on, both hemithyroidectomy; 1 recovered and 1 died. The fatal case was a man, aged 29, with a history of an attack of exophthalmic goitre nine years previously, from which he practically recovered. There was a relapse three months before operation. He only survived the operation a few hours.

Summary of Results and Views on Operative Treatment.

To sum up the results of operations, in 15 cases ligature of the thyroid arteries was performed and of these 3 terminated fatally—2 a few hours after the operation and 1 after an interval of 14 days. In 3 of the 12 cases which recovered the symptoms were not typical and it is doubtful if these were true cases of Graves's disease. In 19 cases thyroidectomy was performed, of which 8 ended fatally. In 4 of the 11 which recovered there was no evidence of Graves's disease found on microscopical examination of the thyroids. In only 2 cases, and both of these cases of ligature of thyroids, was local anaesthesia employed. Of the cases which recovered from the operation no obvious change for better or worse was observed in 12 cases. In 2 cases of ligature of arteries general improvement was noted after the operation. In 2 cases after ligature the patient was worse, in one the thyroid increasing in size and the eyes becoming more prominent, and in the other the pulse being very irregular after the operation.

Our results at St. Thomas's, then, altogether are not at all encouraging. There has been a percentage of deaths amounting to 42 per cent. among the thyroidectomies and to 20 per cent. among the cases of ligature of arteries. It may be noted that the percentage of fatal cases was much higher among those under 25. For persons under the age of 25 the percentage of fatal cases was 53, while for those above the age of 25 it was 24.

Such being my experience among hospital patients, it is not surprising that I have not been an advocate of operation among my private patients. But of the latter a certain number have come under surgical treatment. Some of these have died, and I cannot say whether the others have been much the better for the operation.

A male patient aged 49, whom I saw with Dr. Barclay Baron of Clifton, had had symptoms of exophthalmic goitre for 12 months. It was a typical case, and there had been much loss of weight. Under medical treatment he improved and put on weight, but the goitre increased in size. Later on Dr. Baron took him to Berne, where Professor Kocher ligatured first one superior thyroid and then the other. He was to have had a hemithyroidectomy, but he died from pneumonia after the second operation.

Another case was a woman aged 28, who had had symptoms of Graves's disease for a few weeks when I first saw her. She improved very much under medical treatment, but after a time I lost sight of her. Recently I had a letter from the doctor who sent her to me, saying: "Some time after you saw her a well-known surgeon operated on Miss —, and she died next day."

It is difficult to understand why the results of operation at St. Thomas's Hospital should have been so unfavourable as a whole, while from reports published by many surgeons such a favourable impression of operation results is to be obtained.

Klose¹⁰ published in 1913 a table giving results of operations for exophthalmic goitre by various surgeons from 1896 to 1912. The percentage of cures or of considerable improvement ranges from 50 to 98.7, Th. Kocher claiming 93.7 per cent. and Mayo 97.8 per cent. The percentage of deaths allowed by Th. Kocher is 1.3 and by Mayo 2.2. These figures, I have no hesitation in saying, should be received with great reservation.

A more convincing report has recently been published by Judd and Pemberton.¹¹ Of 121 cases operated on in the Mayo Clinic in 1909, 55 were cured (24 by ligation alone), 22 were benefited but showed some slight evidence of the disease, 7 were markedly improved, 5 were only slightly improved, 8 showed little or no benefit, 21 died, 7 soon after the operation (all of hyperthyroidism). In this, the 97.8 per cent. of cures or considerable improvement has fallen to 70 per cent., but even that is, I am sure, much too high if the cases operated on are true cases of exophthalmic goitre.

In regard to this point I have read with much interest the pronouncement by Professor W. S. Halsted¹²

¹⁰ Klose: Die Basedowsche Krankheit, *Ergeb. d. Inn. Med. u. Kinderheilk.*, Band x., 1913.

¹¹ *Surg., Gynec., and Obstetr.*, March, 1916.

¹² *Harvey Lectures*, 1913-14, p. 245.

who says: "The results of my experience as regards the cure of Graves's disease by one-sided lobectomy are quite at variance with the views of other surgeons." According to this eminent surgeon, who has performed "perhaps 650 operations upon about 500 patients with Graves's disease," a one-sided lobectomy has resulted in an approximate cure in possibly 60 per cent. of the cases, but in certainly more than 60 per cent. (possibly 70 or 80 per cent.) there remain symptoms of over-activity of the thyroid or thymus, or of both of these glands, sufficiently pronounced to be detected by the expert clinician. This statement carries conviction with it, and is in perfect agreement with what I have seen of the results of hemithyroidectomy. In a later communication¹³ Professor Halsted refers to certain cases where even after a double lobe thyroidectomy the improvement had been so unsatisfactory that further treatment was necessary.

The frequent presence of an enlarged or persistent thymus in exophthalmic goitre suggested to Professor Garré, of Bonn, to attempt the cure by resecting the thymus gland. Those who are interested will find a full description in Professor Halsted's Harvey lecture already referred to. The case of von Haberer, in which after prolonged search he succeeded in extracting from behind the manubrium a piece of tissue 3 cm. long and $\frac{1}{2}$ cm. thick, which resembled fat and seemed to contain no thymus gland, and three months later the patient was perfectly well, seems to me rather an example of *post hoc* than one of *propter hoc*.

Local Anæsthesia.

The question of general *versus* local anæsthesia is a very important one, and I am strongly of opinion that operation under local anæsthesia is much safer than under a general anæsthetic. Thomas Huntingdon thinks "we cannot escape the conviction that general anæsthesia is in a very large proportion of cases seriously at fault," and Professor Kocher advocates local anæsthesia, maintaining that a general anæsthetic adds greatly to the danger. I have had no personal experience of operation under local anæsthesia until ten months ago. I then saw two cases operated on by Dr. Dunhill, of Melbourne, and I have since seen one case operated on by Mr. Cunning. In these three cases the operation of hemithyroidectomy was successfully carried out, and the patients have done well since. I should certainly advocate local anæsthesia in future, but recently it has not been possible to procure sufficient novocaine to carry out any further operations.

It may be useful to give the following case in some detail, as showing the actual results attained in one of the hemithyroidectomies under local anæsthesia.

A girl, aged 17½ years, was sent to see me in April, 1914, by Dr. Sutcliffe, of Margate, with a two years' history of exophthalmic goitre. She had a large goitre and extreme exophthalmos, which was very disfiguring. The heart was beating at 128 per minute and was obviously hypertrophied. She was the eldest of a family of four girls, the other three being all remarkably healthy. At the age of four she became affected with tubercle, and successively the fingers, arms, neck, face, head, feet, and legs were the seat of abscesses. She underwent 23 operations, but in the end made a good recovery, and when I saw her showed only the scars of the various incisions which had all soundly healed. She had lived off and on for the last eight or nine years at Margate and had latterly been at school, but had done little work to speak of. Naturally, having been through so many operations, she was very averse to any further surgical treatment. She had all the usual symptoms, especially those of the nervous system. She was excitable and impatient of restraint, and it was difficult to get her to keep quiet and take sufficient rest. Dr. Sutcliffe thought Margate did not suit her, and it was arranged that she should live at home near London and have medical treatment. At first she improved, gained in weight, and her heart became quieter, but the improvement was not maintained, and she not only lost the weight she had gained but an additional 9 lb. At the same time the goitre increased considerably in size. In December, 1915, she implored me to do something more to cure her. The goitre was large and locally inconvenient, and she was obviously getting worse. With my experience of the dangers of thyroidectomy in cases of this kind I felt a very serious responsibility before advising her to submit herself to operation. But thyroidectomy seemed the most likely treatment to benefit her. About this time I met Dr. Dunhill, of Melbourne, and asked him to see her with me, which he kindly did. Although not considering it to be one of the most favourable cases for operation, he

agreed it would be right to give the patient the chance. The operation of hemithyroidectomy was accordingly performed on Dec. 20th, 1915, under local anæsthesia. It was completely successful. The patient stood the operation very well. It was half over before she knew that it had begun, and she expressed pleasure immediately it was over that she had not to suffer any of the disagreeable after-effects of the anæsthetics of which she had had such a large previous experience. I saw her a few days ago and she is certainly now in much better health than she had been for 18 months before the operation. One of the most striking results has been the re-establishment of the catamenia, which had been absent for some eight months before operation and previously to that had been very irregular. One cannot, however, say that a cure has been effected. I can see no difference in the exophthalmos. The heart is still acting as rapidly as before, and when I examined her the rate was 144 to the minute. But she is less restless and excitable and the outlook is much more hopeful than it was before the operation. To effect a cure the remaining lobe of the thyroid must be reduced either by further operation or other means.

My views of operative treatment are:

1. If done at all operation should be performed under local anæsthesia. Local anæsthesia is specially indicated in younger subjects.
2. Ligation of the thyroid arteries does not appear to have any appreciable effect on the disease, and therefore, if done at all, it should only be as a forerunner of thyroidectomy.
3. Thyroidectomy does not cure unless a sufficient amount of gland is removed.
4. If possible, it is better to remove more than an entire lobe at one operation. I do not think the risk will be appreciably increased if this is done.
5. If a whole lobe is left behind it is probable that another operation will be necessary at a later time, unless by means of other treatment a sufficient reduction of the remaining lobe can be brought about.

ON A ROSE-IRRIGATOR FOR SUPPLYING A THERAPEUTIC FLUID CONTINUOUSLY AND AT A STANDARD TEMPERATURE TO THE WHOLE SURFACE OF A WOUND.

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THE ordinary garden water-pot with a rose provides convenient apparatus for breaking up a large into a number of small streams for the irrigation of an extensive surface. But when a slow and continuous irrigation is required the device of the garden water-pot leaves us in the lurch. It has the defect that as soon as we cut down the supply the water is delivered, not, as one would wish, discontinuously in drops through all the apertures, but in a continuous stream through a single aperture. And then the water runs off in a single runnel.

The method of circumventing this difficulty has been explained in a previous communication¹ dealing with the employment of bandages for the irrigation of wound surfaces. It was pointed out there, in connexion with a stream of water carried in a bandage, that it can be divided up into as many branches as one likes by tearing the end of the bandage into tails. To apply this principle we introduce a strip of bandage into the spout of our water-pot and carry a strip to each orifice in the rose.

This is a first requirement for applying a system of irrigation to an extensive wound. For irregular hollow wounds—and wounds which are flat like a garden plot are exceptional—a further requirement is to modify the rose. For in a wound we may have to irrigate at one and the same time a vertical and a horizontal, or an upper and a lower face, or a tunnel or a number of pockets. To do this our irrigating

¹² Johns Hopkins Hospital Bulletin, vol. xxvi., pp. 55-57.

¹ Wright: THE LANCET, Oct. 16th, 1915.

fluid must be delivered from tubes carried forward from the face of our rose.

We fulfil this requirement by employing as our rose a perforated rubber cap, and inserting into the perforations (as was done by Carrel when he covered in his wounds with rubber sheeting, and drained off through this by suction) a set of tubes. To give stiffness to these rubber tubes, and carry them round corners, a copper wire is inserted into each. These were devices of our late colleague Captain H. H. Tanner.

Certain subsidiary improvements have here in the course of time suggested themselves. A drop counter has been introduced to tell whether the stream is flowing and to enable us to regulate the rate of flow. And the copper wires, which used to work loose and protrude, are now anchored to a rubber bung or piece of very stout drainage-tube or aluminium ring inserted into the barrel of the drop counter, or into the irrigating rose itself. (Figs. 1 and 5.) With this, so far as we can see, all the mechanical requirements of a good distributing system are satisfied, and we can now apply our therapeutic fluid over the entire surface of any wound.

Application of Different Patterns of the Irrigator to Different Types of Wounds.

The irrigator here in question may be made in different patterns to suit different requirements. In the one pattern—we call it *Mark 1* (Figs. 1, 2, and 3)—the drop-counter and rose with irrigating tubes make one piece. In the other—we call it *Mark 2* (Figs. 5 and 4)—the drop counter forms a separate element, and the irrigating rose is made as light as possible. The former pattern of irrigator is fitted up by attaching it to the splint by aluminium tape in the manner shown in the figure (Fig. 3), and where there are wounds on the posterior aspects of the limb the delivery tubes are taken round the limb and bent into position.

Where the limb is not anchored to a splint, and we have, as after amputation of a leg, to irrigate the vertical faces of a wound, we may with advantage employ the lighter pattern of irrigator, fitting it to an aluminium arm attached to a plate of perforated zinc which is bandaged down upon the limb. (Fig. 4.) With this arrangement there is no risk of the irrigation tubes becoming displaced.

Problem of Securing the Delivery of the Irrigating Fluid into the Wound at a Standard Temperature.

There yet remained another problem. It was the problem of supplying to the wound—and this, of course, is essential if it is to be treated upon physiological principles—a *therapeutic fluid*² maintained at such a temperature as will bring into full application the antibacterial powers of the organism. The optimum temperature for this purpose is, as experiments on emigration and phagocytosis carried out in emigration tubes teach, a temperature approximating to 40° C.

To achieve, in despite of varying external conditions, the delivery of fluid at a steady temperature of something above blood heat, a good many different factors have to be controlled. (a) The fluid in the reservoir must be kept constantly at the proper heat. (b) The loss of heat between the reservoir and the outlets of the irrigating tubes must be brought under proper control. And (c) the rate of flow must be so adjusted as just to cover the loss of heat and yet not flood out the wound.

(a) *Maintenance of the irrigating fluid in the reservoir at the proper heat.*—This is best achieved by the use of a thermos flask. A convenient way of fitting it up as an irrigating reservoir is shown in Fig. 6. For refilling the bung is removed, hot water is filled into the flask, and the temperature is adjusted by the aid of a thermometer.

(b) *Limitation of the escape of heat from the fluid when on passage from the reservoir to the outlets of the irrigating tubes.*—Experiment shows that there is an important and irregular

loss of heat when the fluid is conveyed to the irrigator through a long length of thin-walled tubing; that this evil is exaggerated with wide-bored tubing, for then fluid lies waiting for passage; and again that the evil is further increased when the regulating screw clamp is applied in the region of the reservoir instead of in the region of the irrigator, for then we have waiting in the tube a body of already cooled water instead of a body of hot water. And again experiment shows that there is an important and irregular loss of heat in the drop chamber when this is too large.

So that the following points must be attended to. The size of the drop counter chamber must be cut down. We must employ a thick-walled and narrow-bored rubber tubing, taking care that it is not too thick-walled or too narrow-bored to interfere with the delicate regulation of the flow of water by our screw clamp. And when our tubing has too thin walls or too wide a bore, we must cut down the length of the tube, and be careful to apply the clamp at its distal end.

We find that an almost absolutely accurate regulation can be obtained by employing a two-foot (i.e., $\frac{2}{3}$ metre) length of $\frac{3}{8}$ inch (9 mm.) external and $\frac{1}{8}$ inch (5 mm. internal diameter, and applying the screw-clamp about two or three inches above the irrigator.

(c) *Regulation of the rate of flow.*—This is done by the screw-clamp, timing the rate of dropping by the drop-counter. For accurate regulation it is, of course, essential to have drops of fixed size. We obtain these by regulating the external diameter of the dropper, the size of the drops being, of course, determined by the extent to which they cling round the outside of the tube. The standard size we have chosen for the dropper is one of 4 mm. external diameter, obtained by inserting the drawn-out glass tube into a hole in the perforated zinc which is supplied to hospitals, and filing and breaking off the point at the level where it is nipped by the aperture. In the case of a medium wound we may adjust the flow at 90 to 100 drops; in a larger wound at 110 to 120 drops; and in a still larger wound at 130 to 140 drops per minute.

The table below gives the temperatures at which the fluid in the reservoir (thermos flask) must be maintained to give, in connexion with the three rates of flow just specified, and the other conditions particularised above, delivery in the wound at a temperature of 39° to 40° C. (102° to 104° F.).

| Rate of flow in number of drops per minute. | Temperature which must be maintained in the reservoir to obtain delivery at 39° to 40° C. |
|---|---|
| 90 to 100 | 75° C. (167° F.) |
| 110 to 120 | 73° C. (163° F.) |
| 130 to 140 | 71° C. (160° F.) |

Method of satisfying oneself that the irrigator is in good working order and is delivering fluid at the proper temperature.—The essential points to look to are the following:

(a) We must see that the fluid is being delivered from the outlets of all the irrigating tubes. If this condition is not satisfied we must remove the rubber rose and see that a strip of bandage is inserted into the orifice of each tube. We must also, to prevent the tubes becoming blocked with grit, periodically see to the renewal of the gauze filter which lies upon the floor of the drop counter. (b) We must see that the arrangements for regulating the flow are functioning properly. It will be found in some cases that the walls of the tubing gradually yield to the pressure of the screw clamp, with the result that the rate of flow is gradually retarded. This condition can often be remedied by boiling the rubber tube. If this does not suffice, a wider-bored and thinner-walled tubing must be employed. (c) We must—for the wound surface is insensitive to temperature—see that the irrigation system delivers the fluid at the required temperature. We do this by collecting all the delivery tubes into an empty test-tube, kept warm by immersion in a bowl of water at blood heat, and explore the temperature with a clinical thermometer.

Method of carrying off the irrigation fluid from the wound, and preventing it leaking away into the bed.—The carrying off of the irrigation fluid and the keeping of the bed dry are not the very difficult things they have been supposed to be. Where the limb is lying horizontally, and a segment of the mattress has been taken out from under it, a broad strip of jaconet can be passed under the limb and the corners can be looped up and tied round the limb above and below the wound. A kind of hammock is thus formed. In combination with this strips of bandage are employed to drain the

² The italics here are intended to suggest to consideration that while the regulation of the temperature must in connexion with an irrigating fluid employed to incite physiological reactions be of dominating importance, such regulation need not therefore be imperative when we are irrigating only with a view to achieving antiseptic effects. And it may in this connexion be pointed out that it is doubtful whether physiological requirements in the matter of temperature could be conformed to when irrigating with hypochlorite antiseptics. For experiments—suggested to us by our fellow-worker, Major G. Dreyer—have shown that both eusol and Dakin's fluid very rapidly lose antiseptic potency when kept warm, even when kept at a temperature of blood heat.

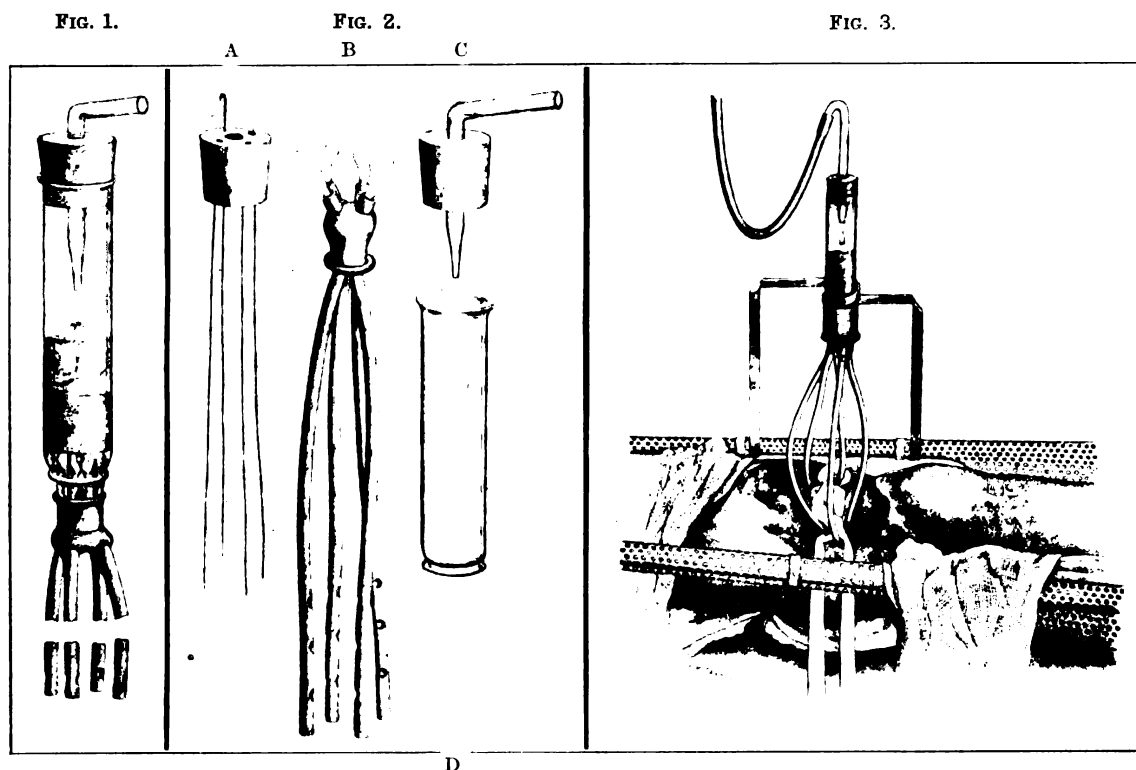


FIG. 1.—Rose-irrigator, Mark 1, showing the drop-counter, gauze filter, and bung for anchoring the copper wires in position. The rubber cap has been dislodged to show the strips of bandage in its interior.

FIG. 2.—Rose-irrigator, Mark 1, showing the component parts. A, The perforated rubber bung into which the copper wires are inserted. B, The rubber cap everted to show the method in which the outlet tubes and the strips of bandage are inserted. C and D, The drop-counter and glass barrel.

FIG. 3.—Showing the irrigating rose, Mark 1, fitted to a splint and the arrangement of the outlet tubes and bandage siphon drains.

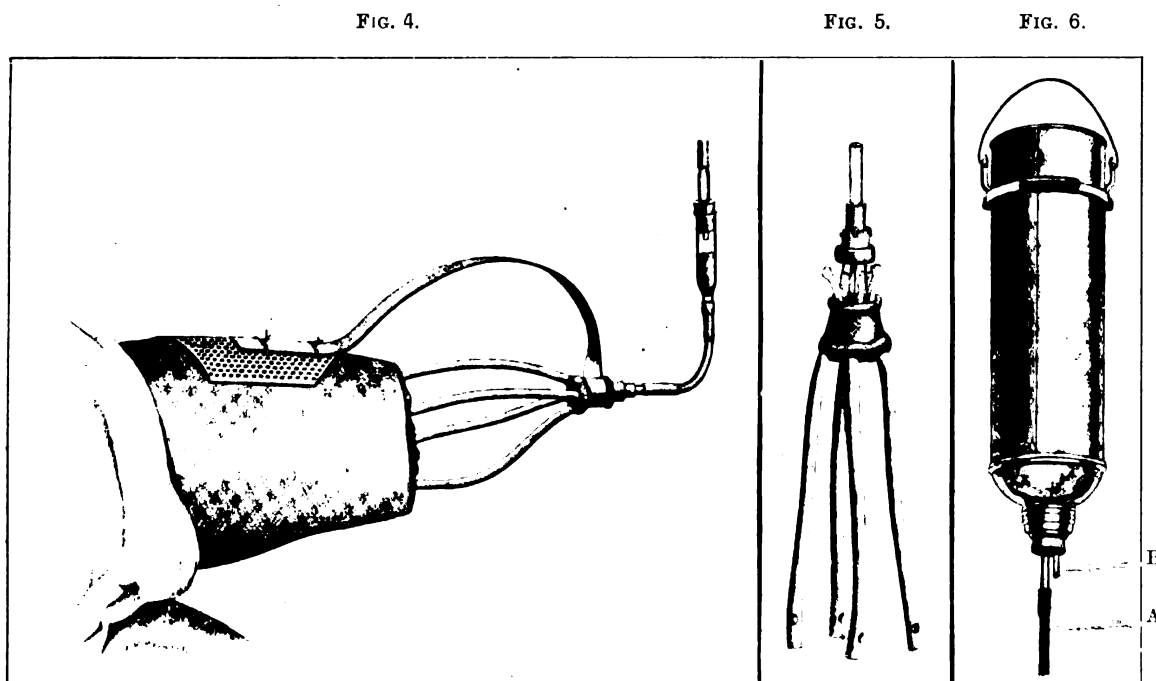


FIG. 4.—Showing the method of fitting the irrigating rose, Mark 2, to an amputated limb.

FIG. 5.—Irrigating rose, Mark 2. The rubber cap is dislodged to show the strips of bandage in its interior.

FIG. 6.—Thermos flask fitted up as an irrigating reservoir. A, Outlet for fluid; this is connected up with the rubber delivery tube. B, Inlet for air; this tube is carried up above the level of the fluid.

wound. In such a case as that shown in Fig. 3 the bandages function as siphons and pass down round the limb. In wounds in dependent positions the bandages would be employed as direct drains. And in either case they pass out through a hole cut out in the trough of the jaconet hammock and go down into a basin placed under the bed.

When the limb cannot be kept in the horizontal position, or where from the anatomical relations of the wound the jaconet hammock is inapplicable, we can, as explained in a previous communication,² bank back the fluid, and effectually prevent leakage into the bed by "irrigation flanges," built up of cotton-wool covered and fastened down to the skin by strips of bandage soaked in formalin gelatin.

THE BACTERIOLOGY OF THE FÆCES IN DIARRHŒA OF INFANTS.

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THE research on which this paper is based was carried out in the summer of 1912 and in the following winter. It was not intended to publish this portion till the work had been carried to a more complete issue. In the present unsettled state of affairs, however, it is considered advisable to use a leave of absence to prepare the following preliminary communication.

The method of study as suggested by Professor J. Ritchie, superintendent of the Research Laboratory of the Royal College of Physicians of Edinburgh, was to make as complete an examination as possible of the intestinal flora of healthy infants and of those suffering from diarrhœa, the differences between the two groups being likely to furnish data bearing on the etiology of infantile diarrhœa.

It was found that the flora of healthy infants varied widely according to the method of feeding, the flora of breast-fed infants differing from that of artificially fed.

In my first paper on these experiments (1914¹) the flora of 21 infants who were free from diarrhœa was dealt with. Eighteen specimens from 14 cases of diarrhœa were partly described. In that paper the scheme of routine examination was given in detail; the same scheme was applied to the cases described in the present paper. Briefly, the method consisted, on the microscopic side, of differentiating the organisms present by means of Gram-stained films. For cultures, from broth emulsions MacConkey plates for the recognition of lactose and non-lactose fermenters were prepared; ordinary agar plates were used for the coccal forms, and for anaerobic bacteria glucose broth, of ordinary reaction or acidified, and milk were employed. After the primary isolation was effected, the organisms obtained were subjected to various further tests. The characters of the "acid-tolerant" and "lactose-fermenting" groups of bacteria, the cocci and the spore-bearers, as isolated both from normal and diarrhœa cases, were fully gone into in the first paper. The conclusion was come to that these groups of organisms were not causal agents of infantile diarrhœa. The "non-lactose-fermenting" group of bacilli, on the other hand, so much more numerous in the fæces of diarrhœa cases, was left for description which is now given below.

The cases of diarrhœa were infants and young children who were patients at the Royal Hospital for Sick Children, Edinburgh. The majority were inmates of Charteris Ward, and I was able to study them through the kindness of Dr. J. S. Fowler. It is important to note that they occurred during the cold and wet summer of 1912, and in the autumn and winter following. Specimens were taken on one or more occasions from 14 cases. Table I. shows the main differences between the intestinal flora of healthy children and of those suffering from diarrhœa. The average findings of 21 normal children under the different diets (A, B, and C) are given at the foot of the table to facilitate comparison. As pointed out in the first paper, the acid-tolerant group greatly predominates over the others in the flora of breast-fed infants, the *B. coli* group and cocci being present in small numbers, while spore-bearers are unimportant. In children

on artificial diet the acid-tolerant group is somewhat reduced, the other groups are relatively increased, and members of the non-lactose-fermenting group begin to make their appearance.

The diarrhœa cases have been divided into three clinical groups.

Group I. contains 2 cases of very mild diarrhœa. Both were on diet C, which in their case meant "anything that was going." Comparing their intestinal flora group by group with that of healthy children on diet C one observes no important change from the normal. No bacilli of the non-lactose-fermenting group were isolated. These cases were evidently due to unsuitability of diet and scarcely come into the class of case which is the subject of this research.

Group II. includes 5 cases of fairly severe diarrhœa, not of dysenteric type. Four were on diet B, one on diet B plus a small amount of diet C. Comparing their flora with that of normal children on diet B striking differences are observed. In the diarrhœa cases there is (i.) an increase in numbers of the *B. coli* group, (ii.) a decrease in numbers of the acid-tolerant group, (iii.) a great increase in numbers of the non-lactose-fermenting group, (iv.) a slight increase in numbers of cocci, and (v.) no increase, possibly a decrease, in numbers of the spore-bearers. The cocci tended to grow in longer chains than in normal stools. This change is analogous to the tendency of diplococci to grow in chains in fluid media, and is probably secondary to the diarrhœa. The characters of the *B. coli* are given in Table X. of the previous paper, tests of their pathogenicity to guinea-pigs in Table XII.; the types were the same as those isolated from normal children, and their virulence to guinea-pigs was not exalted. Therefore, apart from the increase in numbers of the normal *B. coli*, the chief change in these diarrhœa cases is the presence in considerable numbers of members of the non-lactose-fermenting group, along with a decrease in numbers of the acid-tolerant group.

Group III. contains 7 cases of severe ileocolitis, which, clinically speaking, might be classed as dysenteries. The changes in this group are the same as those observed in Group II., but more marked. Again cocci were numerous, especially as cocci in chains, *B. coli* were normal in type and increased in numbers, spore-bearing bacilli very scanty or absent. For the character of members of these groups reference must again be made to the previous paper. The noteworthy change was a great increase of the non-lactose-fermenting group and a great decrease of the acid-tolerant group. In one case no members of the former group were isolated, but *B. proteus* was present in very large numbers. Cases XLII., XLIV., and XLVI. were fatal, and from the two latter were isolated unagglutinable strains of dysentery bacilli.

The changes from the normal in the flora of diarrhœa cases is an exaggeration of the changes seen in the stools of artificially fed infants as compared with those on the breast.

The non-lactose-fermenting group of bacilli.—Into this group fall all Gram-negative bacilli, morphologically of coliform type, which do not ferment lactose nor liquefy gelatin. The best-known members are *B. typhosus*, *B. paratyphosus* A and B, and the various types of *B. dysenteriae*.

In the summers of 1902 and 1903, a large number of workers in America, chiefly under the director of Flexner (1904²) at the Rockefeller Institute, examined the stools of a series of cases of epidemic infantile diarrhœa, with the object of determining the presence or absence of the dysentery bacillus. They were successful in isolating dysentery bacilli, chiefly of the Flexner-Harris type, in about 63 per cent. of the stools examined.

Between 1905 and 1908, Morgan (1906³), along with Ledingham (1909⁴), made extensive studies of the non-lactose-fermenting bacilli isolated from the stools of children in England suffering from epidemic summer diarrhœa. He found Morgan's No. 1 bacillus to be as prevalent in diarrhœa cases in England as the dysentery bacillus was in America—that is, in 63 per cent. of cases; that the sera of many of these cases agglutinated the bacillus, and that diarrhœa could be produced in monkeys by feeding them with this organism. He found also that other types of non-lactose fermenters were much more common in diarrhœa cases than in normal.

From 1910 onwards Lewis (1911,⁵ 1912,⁶ 1914⁷) in Birmingham has made a careful study of this group of

² Loc. cit.

TABLE I.

| Case number. | Month. | Age. | Feeding. | Diarrhea. | Vomiting. | Motion. | | | | Lactose-fermenting group (B. coli). | Acid-tolerant group (B. acidophilus, &c.). | Non-lactose-fermenting group (Morgan's bar., &c.). | Cocci (enterococcus, &c.). | Spore-bearing bacilli (B. enterit., sporog., &c.). | Suspicious organisms isolated. | Case group. |
|----------------|--------|--------------|---|-----------|-----------|------------------|-----------------|--------|--------|-------------------------------------|--|--|----------------------------|--|--|---|
| | | | | | | Colour. | Consistence. | Blood. | Mucus. | | | | | | | |
| XVII., C | Aug. | 1 yr. 9 mos. | Mixed. | + | + | Brown. | Semi-solid. | — | — | +++ | ++ | — | ++ | — | ... | Diarrhea, Group I., Slight cases. |
| XVIII., C | " | 1 yr. 4 mos. | " | + | + | Yellowish green. | " | — | — | +++ | + | — | ++ | — | ... | |
| XIX., B | Aug. | 4½ mos. | Bottle. Cow's milk and water. | ++ | — | Pale green. | Soft. | — | — | ++++ | + | + | + | — | Organism of Group I. Lewis. Bacillus like Shiga, but motile. Morgan's No. 1 group. | Diarrhea, Group II. Fairly severe cases. |
| XX., B | " | 6 " | Bottle. | + | + | Greenish. | Loose. | — | — | ++++ | + | ++ | ++ | — | | |
| XXI., B + C. | " | 11 " | Bottle. Cow's milk and porridge, milk puddings, &c. | +++ | + | " | " | — | — | ++ | ++ | ++ | + | — | | |
| XXIV., B | Nov. | 5 " | Bottle. Cow's milk and water. | +++ | + | " | Very loose. | — | — | ++++ | + | + | + | — | | |
| XXIX., B | Oct. | 4 " | Bottle. | +++ | + | Olive-green. | Slimy. | — | + | ++++ | + | + | ++ | — | " | Diarrhea, Group III. Severe cases of dysenteric type. |
| X., B | June. | 3 mos. | Bottle. | +++ | + | Brown. | Loose, stringy. | + | ? | +++ | ± | — | + | — | B. proteus in large numbers. Bacillus like Flexner, but motile. | |
| XXXIII., C + B | Oct. | 4 yrs. | Milk diet (nephritis) at time of onset of diarrhœa. | ++ | — | ? | Loose. | + | + | ++++ | + | + | + | — | Morgan's No. 1 group. | |
| XXI., B + C | Nov. | 10 mos. | Breast 8 m.s., then milk, boiled bread, porridge, &c. | ++ | — | Greenish. | Very loose. | + | + | ++++ | ± | + | ++ | — | " | |
| XLII., B | " | 13 " | Breast-fed 12 mos. Then cow's milk. | ++ | — | Brownish. | Loose, stringy. | + | + | ++++ | + | ++ | ++ | + | " | Diarrhea, Group III. Severe cases of dysenteric type. |
| XLIII., B | " | 8 " | Bottle. Cow's milk and water. | ++ | — | ? | Slimy. | + | + | ++++ | ± | ++ | ++ | — | " | |
| XLIV., B | " | 5 " | Bottle. Cow's milk and water. | ++ | — | Greenish. | " | — | + | ++++ | ± | ++ | ++ | — | B. dysenteriae type. Flexner Y. | |
| XLVI., C | Jan. | 16 " | Mixed diet. | ++ | — | ? | Loose. | + | + | ++++ | + | ++ | ++ | — | " | |
| A | ... | First year. | Breast. | Healthy | | Normal. | | | | + | ++++ | — | + | ± | Healthy breast-fed. Average of 6 cases. | |
| B | ... | " | Bottle. Cow's milk and water. | " | | " | | | | ++ | +++ | + | + | ± | Healthy bottle-fed. Average of 12 cases (5 bottle and breast). | |
| C | ... | Second year. | Cow's milk, puddings, porridge, &c. = Mixed diet. | " | | " | | | | +++ | ++ | ± | ++ | + | Healthy on mixed diet. Average of 3 cases. | |

The letters A, B, C after case number indicate nature of diet.

organisms. In the cold summer of 1910, in which the outbreak of summer diarrhœa was slight, he found non-lactose-fermenting bacilli in 77 per cent. of diarrhœa cases, and in 14 per cent. of normal; nearly half of these were Morgan's No. 1. In 1911, in which there was a serious outbreak of summer diarrhœa, he found non-lactose fermenters in the stools of 95 per cent. of children suffering from diarrhœa, and of 38 per cent. of children not suffering from diarrhœa. The great majority of these were of the type of Morgan's No. 1. He found this bacillus to be more pathogenic to mice by feeding than were the other members of the non-lactose-fermenting group; but that the strains of Morgan's No. 1 isolated from normal cases were fully as virulent as those isolated from cases of diarrhœa. He established by agglutination tests that Morgan's No. 1 bacillus was in reality a group of organisms. He proved that Morgan's No. 1 bacillus, isolated from normal children, from milk or from mice, may exhibit agglutination reactions identical with those of Morgan's No. 1 bacillus isolated from diarrhœa cases. In 1910 he found bacilli with the characters of the Flexner type 11 times in 47 cases of diarrhœa (23 per cent.). In the summer of 1911, in 175 specimens of fæces from 140 cases of diarrhœa, bacilli with the cultural characters of the dysentery group were isolated on 10 occasions only (7 per cent.).

In America, therefore, the type of non-lactose fermenter prevalent in cases of epidemic summer diarrhœa has been shown to be the dysentery group, while in England it is the gas-producing group known as Morgan's No. 1.

Table II. gives the reactions, &c., of the non-lactose-fermenting bacilli isolated from my series of specimens. In this table the fermentation of the sugars is given as read off at the end of one week's incubation; the change in milk as at the end of a fortnight's incubation; the indol reaction as at the end of a week's incubation in peptone water, Ehrlich's test being used. Motility was tested at the end of four to six hours' incubation in ordinary broth; the effect on gelatin was observed for three months at room temperature. Agglutination tests were done by the macroscopic

method, living cultures being used. The paratyphoid and dysentery sera came from Berlin, and were kindly given me by Dr. F. E. Reynolds. The Morgan's No. 1 serum was prepared from rabbits by increasing doses of killed cultures of strain XLIII 6.

All these cultures were put through the series of tests a second time at the end of three to six months' growth on artificial media. All organisms gave identical results at both testings, except organism XXXIX. 2, which at the first testing left dultite untouched, but at the second fermented it with gas production.

Organisms XLI. 10 and 11, which were liquefiers of gelatin, do not belong to this group of organisms, but are included for comparison.

Bacilli of the non-lactose-fermenting group were isolated from 6 out of 21 infants and young children who were free from diarrhœa (28.5 per cent.). Bacilli of this group were isolated from 11 out of 14 cases of diarrhœa, or 78.5 per cent. If one eliminates the two rather doubtful cases of diarrhœa, XVII. and XVIII., the percentage becomes 91.6.

The non-lactose-fermenters isolated may be divided for discussion into (1) the Morgan's No. 1 group; (2) the dysentery and "dysentery-like" group; and (3) the "paratyphoid-like" group.

Morgan's No. 1 bacillus was obtained from 2 out of a total of 21 normal children examined—that is, from 9 per cent. It was obtained from 5 of 14 children suffering from diarrhœa, or 35 per cent. Reference to the table will show that one of the strains isolated from a normal child was agglutinated by serum XLIII 6; the other was not. Strain XLIII. 6, as mentioned before, was derived from a case of diarrhœa. A strain isolated from another case of diarrhœa was also agglutinated by this serum as well as the homologous organism, while strains from three other diarrhœa cases were not. This is in accordance with Lewis's observations, already referred to, as to the occurrence of members of definite cross-agglutinating subgroups of Morgan's No. 1 bacillus in both normal and diarrhœa specimens. Further reference to the table will show that a Morgan's No. 1

bacillus from a diarrhoea case may be fatal to a guinea-pig, while another strain also from a diarrhoea case, and agglutinable by the same serum, may prove non-fatal in exactly the same dose. A large dose of a strain from a normal case was rapidly fatal to a guinea-pig. It will be noted that Morgan's No. 1 bacillus was isolated both from cases of diarrhoea, Group II., and from the severe type of ileo-colitis, Group III.

There was therefore an increase of the Morgan's No. 1 group in cases of diarrhoea, but identical members of the group, agglutinated up to titre by the same serum, were obtained both from diarrhoea cases and from a child who was at the time, had been, and continued to be, free from diarrhoea.

Dysentery and "dysentery-like" bacilli.—Bacilli classed as true dysentery bacilli, although inagglutinable by the stock Flexner and Y sera, were obtained from no healthy cases, but were found in 3, or 21 per cent., of diarrhoea cases. Two other bacilli, resembling dysentery bacilli in reactions, but motile, were isolated from diarrhoea cases.

Three strains of true dysentery bacilli were of the Flexner-Y type in cultural reactions. The children from whom they were obtained had truly dysenteric symptoms, and two of them died. The strains were all highly pathogenic to guinea-pigs. There is little question that these were cases of infantile bacillary dysentery analogous to the American cases referred to. These cases are described in more detail below.

The organisms isolated from Cases XX. and XXXIII. were in some respects akin to the dysentery group, but both were motile. Recently it has been claimed that a true dysentery may be produced by motile "dysentery-like" bacilli such as these, but further evidence is necessary.

The "paratyphoid-like" bacilli.—No true paratyphoid bacilli were isolated from any case, but "paratyphoid-like" bacilli were isolated from three cases free of diarrhoea, and one, XXXIX. 2, from a case during convalescence from diarrhoea.

The strains from normal cases resembled B. para. B in size of colonies on plates and in heaviness of growth on agar slopes, but in action on litmus milk resembled B. para. A. Two of them were non-motile in four hours old broth cultures, which is not uncommon with B. para. B, but in my experience very

TABLE II.

| Case number. | Organism number. | Lactose. | Glucose. | Mannite. | Dulcitol. | Saccharose. | Salicin. | Motility. | Indol. | Litmus milk. | Gelatin. | Agglutination. | Pathogenicity. | | | | | | Identity. | Case group. |
|--------------|------------------|----------|----------|----------|-----------|-------------|----------|-----------|--------|---------------|----------|--|----------------|--------------------|-----------------|--------------------|----------------------|------------|---|--|
| | | | | | | | | | | | | | Animal. | Medium of culture. | Age of culture. | Amount of culture. | Mode of inoculation. | Result. | | |
| xv. | 1, 2, 3, 4 | — | A.G. | — | — | — | — | + | + | Alk. | N.L. | { Agglutinated up to titre by serum XLIII. 6. Negative para. A, para. B, and Gaertner sera. Negative serum XLIII. 6. Negative para. A, para. B, and Gaertner sera. " " " " } | G.-p. | Agar slope. | 24 hr. | 3 slope. | Intraperit. | Fatal. | Morgan's No. 1. Paratyphoid-like. | { From cases without diarrhoea. } |
| xxxi. | 1 | — | A.G. | — | — | — | — | + | + | A. | N.L. | { Negative para. A, para. B, and Gaertner sera. Negative serum XLIII. 6. Negative para. A, para. B, and Gaertner sera. " " " " } | " | Broth. | " | 2 c.c. | " | Not fatal. | Group H, Lewis's classification. Paratyphoid-like. | |
| xxxii. | 1 | — | A.G. | — | — | — | — | + | + | A. | N.L. | { Negative para. A, para. B, and Gaertner sera. " " " " } | " | " | " | 1 c.c. | " | Fatal. | Group J, Lewis's classification. Morgan's No. 1. | |
| xxxix. 1, 2 | 1, 2 | — | A.G. | — | — | — | — | + | + | A. | N.L. | { " " " " } | " | " | " | 2 c.c. | " | " | " | Group I, Lewis. Shiga-like, but motile. |
| xix. | 3, 4 | — | A.G. | — | — | — | — | + | + | — | N.L. | — | G.-p. | Agar slope. | 24 hr. | 3 slope. | Subcutan. | Not fatal. | Morgan's No. 1. | { From diarrhoea cases. } |
| xx. | 3, 5 | — | A. | — | — | — | — | + | + | Alk. | N.L. | { Negative serum XLIII. 6. Agglutinated up to titre by serum XLIII. 6. Not agglutinated by serum XLIII. 6. Negative, Flexner and Y sera. " " " " } | G.-p. | Agar. | 24 hr. | 1 slope. | Subcutan. | Not fatal. | " " " | |
| xxi. | 2 | — | A.G. | — | — | — | — | + | + | " | N.L. | { " " " " } | Mouse. | Broth. | " | 5 days. | Fed. | " | " " " | |
| xxiv. | 5, 6 | — | A.G. | — | — | — | — | + | + | " | N.L. | { " " " " } | G.-p. | Agar. | 48 hr. | 1 slope. | Subcutan. | " | " " " | |
| xxix. | 22, 23 | — | A.G. | — | — | — | — | + | + | " | N.L. | { " " " " } | " | " | " | " | " | " | " " " | { Flexner-like, but motile. Like Morgan's No. 1 but slow liquefaction of gelatin. Slow and slight liquefier. Morgan's No. 1. " " " " } |
| xxxiii. | 4 | — | A. | — | — | — | — | + | + | Slightly alk. | N.L. | { " " " " } | Mouse. | Broth. | 24 hr. | 5 days. | Fed. | Fatal. | " " " | |
| xl. | 10 | — | A.G. | — | — | — | — | + | + | Alk. | N.L. | { " " " " } | G.-p. | Agar. | " | 1 slope. | Subcutan. | " | " " " | |
| xliv. | 11 | — | A.G. | — | — | — | — | + | + | " | N.L. | { " " " " } | " | Broth. | " | 2 c.c. | Intraperit. | Not fatal. | " " " | |
| xlvi. | 4 | — | A.G. | — | — | — | — | + | + | " | N.L. | { " " " " } | " | " | " | " | " | Fatal. | " " " | { Later examination of Case xxix., diarrhoea. } |
| xlvi. | 6 | — | A.G. | — | — | — | — | + | + | " | N.L. | { " " " " } | 5 mice. | Agar slope. | " | 1/20 slp. | Subcutan. | Not fatal. | " " " | |
| xlvi. | 1, 2 | — | A. | — | — | — | — | — | — | " | N.L. | { " " " " } | Mouse. | Broth. | " | 5 days. | Fed. | Fatal. | " " " | |
| xxxix. | 1, 3 | — | A.G. | — | — | — | — | + | + | Alk. | N.L. | { " " " " } | G.-p. | " | " | 1 c.c. | Intraperit. | Fatal. | " " " | |
| xlvi. | 2 | — | A. | — | — | — | — | + | + | " | N.L. | { " " " " } | " | Broth. | 24 hr. | 2 c.c. | Intraperit. | Fatal. | Morgan's No. 1. Paratyphoid-like. Dysentery. Not agglutinating. | { Later examination of Case xxix., diarrhoea. } |
| xlvi. | 2 | — | A. | — | — | — | — | + | + | " | N.L. | { " " " " } | " | " | " | " | " | " | " " " | |

G.-p. = guinea pig; — in all columns up to gelatin indicates that test gave a negative result; — in columns after gelatin indicates that test was not carried out; N.L. = non-liquefier; Sl.L. = slow liquefier.

rare with B. para. A. They were not agglutinated by paratyphoid or Gaertner sera, and showed a moderate degree of pathogenicity to guinea-pigs. The other strain, XXXIX. 2, was peculiar in not fermenting dultite at the first testing, but in having all the reactions of B. para. B or B. Gaertner at the second testing, five months later. In our examinations of Dardanelles troops at the M.E. laboratory under Captain Archibald, R.A.M.C. (1916*), one of our greatest difficulties was the distinction between true paratyphoid bacilli and harmless "paratyphoid-like" bacilli. Fifteen such inagglutinable strains were obtained by blood culture from cases of undoubted paratyphoid fever. In infants such organisms are in like manner a source of difficulty, but in the present series of cases appeared to be unconnected with the diarrhoea.

Other non-lactose-fermenting bacilli of Groups H and J (Lewis) were obtained from normal cases, while a bacillus of Group I. was obtained from a diarrhoea case.

Observations of a ward epidemic of diarrhoea.—The mode of incidence of the following six cases is of interest.

Case XLI. was admitted to a ward in the beginning of November, 1912. From a specimen examined on Nov. 3rd bacilli resembling Morgan's No. 1, save that they liquefied gelatin, were isolated.

Case XLII. had been admitted to this ward in September suffering from empyema (XXXI.). She was then free from diarrhoea, and a "paratyphoid-like" bacillus was isolated from the stool. On Nov. 16th she developed acute diarrhoea with blood and mucus. From a specimen Morgan's No. 1 bacillus was isolated. A highly agglutinating serum was prepared from strain XLIII. 6.

Case XLII. was admitted to the ward on Nov. 5th suffering from lobar pneumonia. On Nov. 18th she developed acute diarrhoea with blood and mucus in the stools. On Nov. 19th Morgan's No. 1 bacillus was obtained from a specimen. The child died on Nov. 23rd. The Morgan's No. 1 bacillus from this case was not agglutinated by serum XLIII. 6, and therefore did not belong to the same subgroup of the Morgan's No. 1 group.

Case XLIV. was admitted to the ward on Nov. 13th. On Nov. 19th very severe diarrhoea with passage of blood and mucus started. On Nov. 24th an inagglutinable dysentery bacillus of Flexner-Y type was isolated. The child died on Nov. 25th.

It will be observed that in these four cases, all in the ward at the same time, and three of them starting acute diarrhoea within a period of three days, the non-lactose-fermenters isolated were different in each case.

Another case (XXIX.) was admitted to the ward in October suffering from diarrhoea. On Oct. 15th Morgan's No. 1 bacillus was isolated from her faeces. On Oct. 30th she was convalescent, and a second examination at this date again produced Morgan's No. 1 bacillus, along with a "paratyphoid-like" bacillus (XXXIX.). In the latter part of November and in December she had another very severe bout of diarrhoea, but a specimen was not examined during this period. On Jan. 6th she had completely recovered and from her stool at this date (specimen XLV.) was isolated a dysentery bacillus, inagglutinable, with Flexner-Y reactions. This child was in the ward at the same time as Case XLIV., from whom a similar organism was isolated.

The last case of this series, XLVI., was admitted to the ward in December, suffering from chronic diarrhoea, along with an ischio-rectal abscess. Towards the end of December his diarrhoea became very acute and of dysenteric type. On Jan. 6th a dysentery bacillus, inagglutinable, with Flexner-Y reactions, was isolated from his stool. The child died on Jan. 9th.

It is reasonable to suppose that the cases from which specimens XLIV., XLV., and XLVI. were obtained were (1) infected one from the other, or (2) infected from a common source. When specimen XXXIX. was obtained from the second child her flora was still of the diarrhoea type and harboured Morgan's No. 1 bacillus, and was therefore probably less protected against the onslaught of a dysentery bacillus. That this child was still harbouring a dysentery bacillus after complete recovery from diarrhoea directs attention to the carrier problem in dysentery of infants as well as of adults.

The cases XLI. to XLIII. still remain a puzzle. They occurred in apparently epidemic form, and yet the non-lactose-fermenter isolated was different in each case. Is the explanation possibly that Cases XLI. to XLIII. were suffering from true dysenteric infection, but that the secondary overgrowth in the intestine of other non-lactose-fermenters had concealed the presence of the dysentery bacilli? Is it that there are several varieties of non-lactose-fermenters

which are capable of producing a diarrhoea or even an inflammation or ulceration of the intestine? Or does a common cause produce conditions in the intestine permitting the overgrowth of non-lactose-fermenters as a result rather than a cause of the diarrhoea? It is impossible without further research to answer these questions.

I would again lay stress on the differences between the flora of breast-fed children and of children on artificial diet, and on the exaggeration of the same differences when one proceeds further to the flora of children suffering from a diarrhoea. In my first paper it was pointed out how completely the acid-tolerant group is able to outgrow the non-lactose-fermenting group in a medium containing lactose or glucose, the acid produced by the splitting of the sugar rapidly killing off the latter group of organisms. It is possible that the acid-tolerant group plays a beneficial part in restricting the growth of these organisms, and that any cause, chemical or otherwise, which inhibited the growth of the acid-tolerant group might set up a diarrhoea by thus permitting an overgrowth of members of the non-lactose-fermenting group. Further work on these lines is desirable, and the relative immunity to diarrhoea of breast-fed children should be taken as a starting-point.

Summary.—Fourteen cases of diarrhoea were all on artificial diet at the time of onset. The flora of artificially fed infants differs from that of breast-fed infants chiefly in a decrease of the acid-tolerant group, an increase of the normal B. coli group, and in the appearance of members of the non-lactose-fermenting group along with some increase of cocci. The flora of infants suffering from diarrhoea shows similar but more marked changes, and the more severe the diarrhoea the more marked the changes. It is probable that the acid-tolerant group exerts a beneficial influence in restraining the growth in the intestine of the non-lactose-fermenting group.

Bacilli of the non-lactose-fermenting group were obtained from 6 out of 21 (28.5 per cent.) infants and young children who were free from diarrhoea. Bacilli of this group were isolated from 11 out of 14 cases of diarrhoea (78.5 per cent.). Bacilli of Morgan's No. 1 group were isolated from 9 per cent. of the normal children, and from 35 per cent. of the cases of diarrhoea.

True, though non-agglutinable, dysentery bacilli were isolated from none of the normal children, but were obtained from three cases of diarrhoea with blood and mucus (dysentery), or 21 per cent. of total diarrhoea cases. A certain number of cases of diarrhoea of infants are therefore true bacillary dysenteries, even in Scotland and in winter-time.

It is doubtful whether the overgrowth of non-lactose-fermenting bacilli initiates the diarrhoea, or whether it is a secondary and aggravating factor.

Literature.—1. Logan: Journ. of Path. and Bact., vol. xviii., p. 527, 1914. 2. Flexner and co-workers: Studies from the Rockefeller Institute, 1904, vol. II. 3. Morgan: Brit. Med. Jour., 1906, vol. I., p. 1911. 4. Morgan and Ledingham: Proc. Roy. Soc. Med., 1909, II., 2, Epidemiological Section. 5. Lewis: Annual Report of Medical Officer of Local Government Board for 1910-11, Appendix B, No. 2. 6. Lewis: Ibid for 1911-12, Appendix B, No. 2. 7. Lewis: Ibid. for 1912-13, Appendix B, No. 3. 8. Archibald, Hadfield, Logan, and Campbell: Jour. of R.A.M.C., June, 1916.

AN IMPROVED OPERATION FOR INTRINSIC MALIGNANT DISEASE OF THE LARYNX.

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In February last I demonstrated an improved operation for the removal of malignant growths of the vocal cords, and in April I described the method more fully in the *Journal of Laryngology*. The improvement consisted essentially in removing a portion of the laryngeal cartilages on the affected side. The steps of the operation are briefly as follows.

The larynx and the upper rings of the trachea are exposed through the usual vertical median incision and a tracheotomy tube is inserted. Then the soft tissues and perichondrium are turned off the thyroid cartilage on the affected side; the crico-thyroid membrane and the ring of the cricoid are laid bare. Next, if desired, thyrotomy is performed by splitting the thyroid cartilage in the median line in the usual way. By gentle traction on the margins of

the opening thus made the interior of the larynx can be inspected and the nature and extent of the growth seen. With strong cutting forceps the growth, with a sufficient margin of healthy tissue, is now cut away, together with the overlying cartilage in one piece. The taking away of the cartilage together with the underlying soft parts ensures not only a more thorough removal of the growth, but gives a much better view of the parts which are being divided, and much freer access for the use of instruments in the interior of the larynx.

The thyrotomy is not always necessary. When it is known that the growth is malignant and that it is limited to one vocal cord there is no need to split the thyroid. With a small saw the thyroid cartilage is divided in the median line from its lower edge upwards nearly to the upper margin. A transverse incision is then carried backwards just below the upper edge of the thyroid, nearly to the posterior border, and then downwards just in front of the posterior border. The square piece of cartilage thus marked out is removed, and subsequently the larynx is opened by dividing the underlying soft parts.

The following advantages were claimed for the operation.

1. It ensures more thorough removal of the disease by giving a free view of the parts to be removed, as well as by taking away the overlying cartilage.
2. The operation is rapid and easy.
3. Bleeding is easily controlled and the great danger of the operation—blood entering the air-passages and causing difficulty with the anæsthetic and subsequently septic pneumonia—is avoided.
4. After the operation the patient is able to swallow without difficulty or pain, which is not always the case with thyrotomy when there has been much wrenching apart of the cartilages.
5. Healing is rapid, and there is no subsequent necrosis of a fragment of cartilage, such as occasionally follows an ordinary thyrotomy.
6. The after-results as regards the voice are excellent and there seems no danger of subsequent laryngeal stenosis.

The advantages of this method, and more especially that of being able to see plainly the parts which are being divided and thus of being able to arrest immediately every bleeding point, have led me to simplify the operation. As all hæmorrhage can be immediately arrested the preliminary tracheotomy is obviously a useless and unnecessary complication. Being able to dispense with tracheotomy the usual vertical incision down the front of the neck can be replaced by a curved transverse incision. The advantages of the transverse incision, both with regard to rapidity of healing and the subsequent cosmetic effect, need hardly be mentioned. The transverse incision gives a better view of the parts to be removed and heals with hardly any scarring or puckering. Also, it is more superficial and less extensive, and the deeper tissues in the lower part of the neck are not opened up. Thus there is less risk of sepsis, and healing is more rapid.

This operation I recently carried out in the case of a feeble man, aged 72, with epithelioma of the right vocal cord. The man was suffering from general atheroma and cardiac degeneration, as well as from chronic emphysema and bronchitis. He was therefore a bad subject for a prolonged anæsthetic and especially for an operation upon the air-passages. It was essential that the operation should be performed quickly, that no blood or fluid should enter the windpipe during the operation, and that there should be no trouble in swallowing subsequently. Naturally also the smaller and the more superficial the wound and the quicker the healing, the more likely he was to survive. Under chloroform anæsthesia a curved horizontal incision was carried across the front of the larynx at the level of the crico-thyroid membrane. The tissues being divided down to the larynx the crico-thyroid membrane, the upper edge of the cricoid ring, and the right half of the thyroid cartilage were freely exposed. With a small saw the thyroid cartilage was divided in the median line from its lower edge nearly to the notch in its upper border. A cut almost at right angles to this was carried backwards just below the upper edge of the thyroid cartilage, and then another vertical incision was made near the posterior edge of the cartilage, so as to mark out a square of cartilage and leaving intact both the posterior and upper borders of the thyroid. The piece of cartilage thus

marked out was detached from the soft parts underlying it with a blunt dissector and removed. All bleeding being arrested the interior of the larynx was carefully opened in the median line through the crico-thyroid membrane and upwards along the course of the first incision in the cartilage above described. Then an incision was carried backwards along the lower border of the crico-thyroid membrane as close to the cricoid ring as possible, and the edges of the triangular flap thus marked out being retracted the interior of the larynx and the growth could plainly be seen. The growth, with a sufficient margin of surrounding healthy tissue, was now detached on a third side by a horizontal incision carried well above it, and finally dissected posteriorly off the arytenoid cartilage. All this cutting was carried out piece by piece and every bleeding point being picked up at once, the growth was removed without a drop of blood entering the air-passages. The operation up to this point occupied barely 35 minutes. Some time was now spent in allowing the wound to become "glazed" by exposure to the air and letting the patient come almost out of the anæsthetic, so that no possible source of subsequent bleeding should be left. When the wound was quite dry the edges of the skin were brought together by two stitches, except for a small gap at its centre which was left open for drainage. A simple dressing was applied and the patient returned to bed. He made an uninterrupted recovery without any complications. He was in a very feeble condition, and I feel sure that he could not have stood a severe operation or even a prolonged anæsthetic.

This operation is both safer and more thorough than the ordinary thyrotomy. It is safer because (1) it is simpler and therefore more rapidly performed; (2) it allows free access to the field of operation and therefore complete facility for dealing with hæmorrhage; (3) the smaller and more superficial wound entails less danger of sepsis; (4) the transverse incision heals more quickly; and (5) tracheotomy is quite unnecessary and is therefore omitted. It is more thorough because (1) it allows a good view of the parts to be removed; and (2) the overlying cartilage is also removed. These advantages are obtained without any corresponding risks or disadvantages. I believe, therefore, that it will be the method of choice in the future, and that thyrotomy, except as a purely exploratory operation, will no longer be practised.

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THE ORIGIN AND PREVENTION OF CEREBRO-SPINAL FEVER.

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IT may be that if the causes and prevention of cerebro-spinal fever had been less simple they would have been more generally accepted by the profession to-day.

The Specific Organism.

The diplococcus intracellularis meningitidis of Weichselbaum conforms to Koch's law for pathogenic organisms. Constantly found in the tissues and body fluids of the victims of epidemic cerebro-spinal meningitis, the meningococcus may be isolated in pure culture, is able to reproduce the disease in monkeys, can be recovered from the lesions in these animals, and is therefore the causal organism of cerebro-spinal fever.

Apart from the monkey, man is the only animal in whose nervous system specific lesions are produced by this organism. Starting, then, with the proved proposition that the meningococcus is the sole cause of cerebro-spinal fever, it is possible to show, with the exactness of a problem in Euclid, the means whereby man is infected, the conditions under which he develops the malady, and the method of preventing both infection and disease.

Conditions Determining the Spread of Infection.

At times when the disease is not prevalent meningococci have been found in the throats of 2 per cent. of healthy soldiers.¹ Among healthy naval ratings, not known to have

¹ Brit. Med. Jour., 1915, vol. 1., p. 466.

been exposed to infection, I found meningococci in the throats of two individuals out of a hundred examined. The organism has recently been found in a larger proportion of the civil population not exposed to infection.²

It is evident that meningococci may exist as harmless saprophytes in the throats of healthy persons. These people may or may not develop the disease, and they may or may not spread the infection to others. If they do transmit the meningococcus to other people, it is obvious that the number of persons amongst whom the disease may arise will be increased. The conditions which determine whether or not infection is spread are as follows. Any organism in the naso-pharynx may be expelled from the mouth during the act of coughing in small droplets of secretion which float in the air for from half an hour to four hours, according to the density and humidity of the atmosphere. This would easily explain the method of infection provided the temperature of the air was above 22° C., but on the other hand, meningococci so n perish at lower temperatures. Now 22° C. corresponds to 71.6° F., and I found that meningococci die in 30 minutes when exposed to a temperature of 60° F., while lower temperatures are more rapidly fatal.³ It is therefore clear that air-borne meningococcal infection can only occur in a warm atmosphere, and is impossible in cold air.

Epidemics of cerebro-spinal fever usually begin in January or February, and disappear with the advent of May. But January and February are the two coldest months of the year, as is proved by daily readings for many years of the temperature in the watermains at Chelsea. The temperature of water follows the mean air temperature, and in these months the lowest readings of 37° to 40° F. are obtained.⁴ The paradox of a disease which appears during cold weather, but whose specific cause is destroyed by cold air and can only be carried by warm air, is explained by the fact that cold wet weather leads to shutting off the natural means of ventilation, and that the air indoors becomes warm and saturated. Under these conditions air-borne meningococcal infection is carried from one person to another. Overcrowding was long regarded as predisposing to the malady, but in my original communication⁵ I showed that warm saturated air is the *actual cause* not only of the spread of infection but also of the incidence of the disease. An objection to this theory might be raised in the query, Why does not infection spread in the summer months when the air is warm? The air in summer is less saturated than in winter, droplets of secretion are dried up more rapidly, and meningococci offer no resistance to drying. Lastly, even if infection were spread in summer, the essential condition which determines the secondary invasion of the tissues would be absent.

Epidemics of cerebro-spinal fever have occurred among native races in tropical countries, and this is in favour of my explanation. In the West African jungle I found natives in ill-ventilated huts where the atmosphere at night must have been as saturated and warm from the breathing bodies of the occupants as the moist air from the swamps outside. In such a climate the only factor that would limit the spread of infection is the burning sun by day.

Conditions which Determine Secondary Invasion of the Tissues.

When warm saturated air is inhaled the nasal mucosa becomes swollen, congested, and covered with thick secretion, the activity of the ciliated cells is reduced, and phagocytic action in the lymphoid tissues is diminished.⁶ This means a lowered local resistance to any bacterial infection which may be present in the naso-pharynx. Now bacteria are only saprophytic by virtue of the superior resistance of the tissues, and if the resistance be lowered the bacteria become pathogenic. Warm saturated air enables meningococci to be carried to the naso-pharynx, creates there a local condition favourable to the growth of the parasite, and reduces the phagocytic properties of the lymphoid tissue, so that the organism is able to pass the first line of defence, enter the lymphatic system, and find its way *via* the

blood stream to the central nervous system, on which either cold or over-fatigue have acted as predisposing influences. Furthermore, warm saturated air favours the incidence of all air-borne infections. Thus on Feb. 5th, 1916, between the hours of midnight and 2 A.M., and between 4 A.M. and 5 A.M., I visited barrack-rooms in which over 2000 men were sleeping. One example of the conditions which prevailed will suffice. Room E3 was occupied by 16 men, which allowed 670 cubic feet per man. Of 12 windows only one was slightly open at the top. The air was hot, close, nauseating, and oppressive, while the moisture of condensation was streaming down the windows. I contend that the amount of cubic space per man is not a safe guide to the efficiency or deficiency of ventilation, which must be judged on common-sense data.

Now the case incidence of certain respiratory diseases due to air-borne infection in the above barracks was as follows for the six weeks ending Feb. 5th, 1916:—

| Week ending— | Catarrh. | Tonsillitis. | Sore throat. | Total strength. | Case incidence. |
|---------------|----------|--------------|--------------|-----------------|-----------------|
| Jan. 1st ... | 14 | 2 | 0 | 2112 | 7.5 per 1000. |
| Jan. 8th ... | 5 | 3 | 0 | 2067 | 3.8 |
| Jan. 15th ... | 6 | 0 | 7 | 2091 | 6.2 |
| Jan. 22nd ... | 23 | 2 | 3 | 2125 | 13.1 |
| Jan. 29th ... | 18 | 6 | 4 | 2128 | 13.1 |
| Feb. 5th ... | 60 | 10 | 10 | 2155 | 37.1 |

The rise in diseases due to air-borne infection is very apparent during the last week, and in that week two cases of cerebro-spinal fever appeared.

Prevention.

Once cerebro-spinal fever has appeared in any community, bacteriological examination of the contacts discovers the number of infected persons. These are regarded as potential causes of the disease, and the development of the malady among such people can sometimes, but not always,⁷ be prevented by the local application of antiseptic sprays or vapours to their throats. This treatment, if efficient, also prevents the further spread of infection, but of necessity it has a very limited application. It is no more practicable to free the throats of the entire population from meningococci than it would be to attack the widespread distribution of the pneumococcus as a saprophyte in the throats of healthy people.

To control the spread of infection once it has arisen is wise, but it would be infinitely wiser to prevent the possibility of infection in the first instance. The means of prevention are simple. All windows must be open day and night, and to prevent the necessity for closing them in rain or in wind, a weather-board of 18 inches in depth is fixed inside the lower part of the window at an angle of 45°, so that the lower sash may be screwed up one foot from the bottom. A night patrol may be required to see that the space between the window and the weather-board is not covered over with clothes to keep out the air. In the barracks to which I have referred these alterations were carried out at a cost of £200. No further cases of cerebro-spinal fever appeared, and the incidence of respiratory diseases showed a remarkable fall. These simple measures soon save their cost in preventing the possibility either of infection or disease, in obviating the necessity for an enormous amount of expert bacteriological work, in diminishing the incidence of all affections of the respiratory system, and in raising the general health of those to whom they are applied.

If these statements are tested on a large scale by the authorities during the coming winter there will be no cases of cerebro-spinal fever in the Services. There would be nothing very remarkable in such a fortunate result, for the power whose aid is here invoked is the *Vis Medicatrix Naturæ*.

⁷ C. H. Whiteside: Journ. of the R.N. Med. Service, vol. 1, No. 3, p. 251.

Temporary Lieutenant-Colonel H. R. Kenwood, R.A.M.C., professor of hygiene and public health in the University of London, will deliver a public lecture at University College, London, on "Hygiene: Some Lessons of the War," on Friday next, Nov. 17th, at 5.30 P.M. The chair will be taken by Surgeon-General Sir Alfred Keogh, Director-General, Army Medical Service. The lecture is open to the public without fee or ticket.

² B. M. Med. Jour., 1914, vol. II., p. 228.

³ THE LANCET, 1915, vol. II., p. 362.

⁴ Parkes and Kenwood: Hygiene and Public Health, fifth edition, p. 43.

⁵ THE LANCET, 1915, vol. II., p. 862.

⁶ Leonard Hill and F. F. Muecke: THE LANCET, May 10th, 1913, p. 1291.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

Inaugural Address.—Exhibition of Cases.—Photography of Macroscopic and Microscopic Eye Specimens.—Bilateral Glioma of the Retina.—Recurrent Glioma of the Retina.

A MEETING of this section was held on Nov. 1st, Mr. WILLIAM LANG, the President, being in the chair.

In his inaugural address, the PRESIDENT advocated the appointment of a small committee to initiate and organise research and, perhaps, a bureau for collecting particulars of rare cases. In this way a quantity of valuable material would be available for research scholars, or for a committee appointed to make use of it. Further, a card-index system for the recording of all literature bearing on the science of ophthalmology in the United Kingdom would be very valuable. At present pathological confirmation of the findings of clinical observation on an adequate scale was lacking, especially in regard to septic foci as the cause of many eye diseases. With the society's excellent laboratory it only needed a system of subsidised workers. This could well be the occasion for joining with other bodies in a crusade to instruct the nation in the cultivation of right habits, notably in regard to clean mouths. The same purpose pervaded all: to decrease by British effort the power of every disease.

Mr. G. WINFIELD ROLL showed a case of Congenital Pigmentation of the Optic Disc. The patient was the subject of glycosuria, and the right eye was affected with retinitis. The vessels in the remainder of the fundus were normal.

Dr. F. E. BATTEN showed a child with Pigmented Degeneration of the Retina associated with epileptic fits. The sight had failed somewhat rapidly during the last year, and a central scotoma in both eyes had been demonstrated, somewhat to the temporal side. There was also optic atrophy and some pigmentary disturbance at or near the macula. Physical examination of the nervous system was negative. The father was syphilitic, but this patient showed no trace of that disease.—The case was discussed by Mr. PATON, Mr. R. D. BATTEN, Captain A. W. ORMOND, Mr. MAYOU, Mr. HERBERT PARSONS, and the PRESIDENT.

Mr. NORMAN B. B. FLEMING showed a case of Retinitis Circinata, with changes in blood-vessels.

Mr. A. C. HUDSON exhibited a new small Speculum.

Lieutenant-Colonel R. H. ELLIOT and Mrs. ELLIOT communicated a paper on the Photography of Macroscopic and Microscopic Eye Specimens. The object of the paper was to help those who desired to photograph macroscopic eye preparations, there being no available literature on the subject. The following points were regarded as of importance: 1. The photograph must be taken in water, without the intervention of glass or other similar material. 2. The source of light must be good and even. 3. The camera must be placed vertically above the object so as to avoid reflections. 4. The object of the photograph must be so placed that its image will occupy the centre of the plate, and a method of adjustment should be available to secure this end with a minimum of inconvenience. 5. A simple arrangement is necessary to fix the eye in position during the whole period of exposure. 6. To save unnecessary retouching the object should be photographed lying on a dark and uniform surface to obviate the background disturbing the attention of those viewing the picture. 7. Care should be exercised in the choice of a camera and exposure periods must be carefully studied. For the making of lantern-slides the contact method was recommended, and attention was directed to the following points: correct exposure; the preparation of plates for exposure; development and fixation of the slides; the drying of the plates; and the reduction, intensification, and varnishing of slides.

Dr. FRANK E. TAYLOR and Mr. FLEMING contributed a paper on a case of Bilateral Glioma of the Retina with Multiple Metastases. The patient was a female child aged 3 years, in whom an abnormality was noticed in the left eye 18 months previously. On admission to hospital there was a fungating growth protruding between the lids of the left eye, keeping them separate. The mass was bathed with a

thin, semi-purulent discharge. The right eye was much enlarged, and apparently proptosed, the iris fully dilated, and stretched into a thin band at the limbus, the lens being in contact with the posterior aspect of the cornea. The growth was of lemon colour. No reflex was obtainable ophthalmoscopically. Mr. Elmore W. Brewerton (with whose permission the case was recorded) operated at once, performing exenteration of the orbit, with partial removal of the lids, afterwards suturing the wound. The right eye was very freely excised. The optic nerve was found to be involved, being surrounded by growth for half an inch behind the eye. A fortnight after discharge from hospital there was a recurrence, half the size of a tennis ball, from which the patient died. She had shown but little evidence of suffering pain. Microscopically the growths were found to be composed of closely-packed small round cells, with large deeply-staining nuclei. A few spindle cells were also present. The body was much emaciated, and the metastases were extensively distributed. The subject was discussed from a general standpoint.

Mr. ARNOLD LAWSON read notes on a case of Recurrent Glioma of the Retina. The patient was a boy aged 3½ years, and the gliomatous eye was removed. It had almost perforated the globe. Mr. R. A. Greeves found a large scleral staphyloma at the front, and it was infiltrated with glioma cells, while masses of growth could be traced along the sheath of the foramen. After the patient had remained well for six months there was a recurrence in the orbital cellular tissues, and evisceration was carried out at hospital. There was a further recurrence, and 90 mgm. of radium were applied for four and a half hours. Free sloughing followed, and the child was kept in hospital for six and a half weeks, at the end of which time there seemed to be no sign of growth. Three months later, however, the patient was readmitted on account of a fluctuating swelling; it yielded pus, at the bottom of which was suspicious pultaceous material. Investigation revealed an extensive recurrence, beyond the reach of either further operation or radium. The child appeared to have a remarkable absence of pain, and seemed fairly comfortable except towards the end.—This paper and the preceding one were discussed by Mr. W. C. ROCKLIFFE, Mr. BREWERTON, Mr. PARSONS, Mr. HOLMES SPICER, Lieut.-Colonel ELLIOT, and Mr. TREACHER COLLINS, the last named calling attention to the different methods of spread of glioma and sarcoma of the orbit: one began in the neural epiblast and the other in the mesoblastic tissue. Sarcoma of the choroid generally spread by metastases, whereas gliomatous growths spread by continuity, and death occurred from local recurrences, as was shown in a number of cases traced by Mr. J. B. Lawford and himself. Lieut.-Colonel Elliot agreed with Mr. Brewerton's operative procedures, speaking from his experience of a number of such cases in India.

HARVEIAN SOCIETY OF LONDON.—A meeting of this society was held on Nov. 2nd, Dr. Edmund Cautley, the President, being in the chair.—A paper entitled "Warfare on the Brain" was read by Dr. E. Farquhar Buzzard, dealing chiefly with the subjects of shell shock and, secondly, traumatic epilepsy. Dr. Buzzard said that shell shock, a much-abused and unfortunate term, covered (a) cases of pure exhaustion; (b) cases in which exhaustion had excited inherited neuropathic and psychopathic tendencies into activity; (c) "martial misfits" passing as normal individuals in civil life but unable to bear the strain of military service; (d) normal individuals affected by close shell explosion and showing symptoms similar to those following a blow on the head. Care must be taken to exclude the presence of organic changes in the skull or brain; such a symptom as mutism is hysterical and signifies mental disorder and not a localised cerebral injury. In the first three groups direct exposure to shell explosion might be absent, he said, or at most was merely a culminating factor in the production of symptoms. The principle underlying surgical interference was, Dr. Buzzard said, not to cure the epilepsy but to restore the injured part of the brain as far as possible towards the normal; where operation would have the opposite effect it was contra-indicated. The treatment of the epilepsy itself was medical, and the prophylactic use of bromide in cases of head injury of great importance. The problem of the treatment of the large numbers of these cases occurring at the present time would, he said, be of national importance.—An interesting discussion followed Dr. Buzzard's paper.

Reviews and Notices of Books.

Les Formes Anormales du Tétanos.

Par M. COURTOIS-SUFFIT, Médecin des Hôpitaux de Paris, et R. GIROUX, Interne Pr. des Hôpitaux de Paris. Préface du Professeur FERNAND-WIDAL. Paris: Masson et Cie. 1916. Pp. 174.

THIS is one of a series of books connected with the war. It deals with the vastly important subject of tetanus, which was so greatly in evidence in the earlier stages of the war in Flanders and the north of France; but it does not concern itself with the typical and ordinary cases of the disease which naturally form the large majority of those seen, treating rather of the abnormal forms, which are more numerous than most surgeons think. The forms of tetanus to which the authors specially apply the term atypical are mainly those in which the disease is confined to the head, and those in which only a localised affection of the limbs occurs. Of the cephalic form there are several varieties according to the parts involved, such as those in which the eye muscles are affected and those where the hypoglossal is paralysed. In the partial forms of tetanus affecting the limbs we find cases where the disease is monoplegic and others in which it is paraplegic; and others again in which the muscles affected are only those of the thorax and abdomen.

Professor Vidal, who contributes a brief preface to this monograph, writes thus on the subject of local tetanus, and the passage is of sufficient importance to quote at length:—

Partial tetanus of the limbs offers not merely the interest of a clinical novelty; its special mechanism gives it a general bearing on the production of tetanus, an aspect which the authors rightly emphasise. In the same way as an attenuated typhoid fever is now and then met with in subjects insufficiently vaccinated, so tetanus may remain localised to the injured limb when sero-therapy has been practised under conditions which render it insufficient. It is a tetanus of incomplete immunisation and affords a good example of the modified morbid types with which preventive medicine is enriching the natural history of infectious diseases.

The authors have made a wide examination of medical literature as the extensive bibliography shows, and this monograph on the little-known varieties of a disease not commonly seen in civil practice is timely and valuable. The sections on prophylaxis and treatment are good, and it is hardly necessary to say that the authors insist on the prophylactic injection of antitetanic serum as the only trustworthy method of prevention.

LIBRARY TABLE.

Anatomy, Descriptive and Applied. By HENRY GRAY, F.R.S. Edited by ROBERT HOWDEN, M.A., D.Sc. Durh., M.B., C.M. Edin., Professor of Anatomy in the University of Durham. Notes on Applied Anatomy revised by A. J. JEX-BLAKE, M.A., M.D. Oxon., F.R.C.P. Lond., Senior Assistant Physician to St. George's Hospital; and W. FEDDE FEDDEN, M.B., M.S. Lond., F.R.C.S. Eng., Surgeon and Lecturer on Surgery, St. George's Hospital. Nineteenth edition. With 1143 illustrations, of which 499 are coloured. London: Longmans, Green, and Co. 1916. Pp. xvi. 1304. Price 32s. net.—This (nineteenth) edition continues to maintain all the best traditions of "Gray's Anatomy"—a work which is familiar to English-speaking medical men all the world over. We notice that the number of coloured illustrations has been increased, and that some 80 figures are new. A considerable number (about 60) of the older illustrations have been done away with and replaced by drawings which are the work of Mr. S. A. Sewell. The text has been revised throughout, but the general arrangement of the book is similar to that of the last edition.

The Essentials of Chemical Physiology for the Use of Students. By W. D. HALLIBURTON, M.D. Lond., LL.D., F.R.S. Ninth edition. With coloured plate. London: Longmans, Green, and Co. 1916. Pp. 324. Price 6s. net.—This eminently practical book has reached its ninth edition which

speaks well for its reception. It is rightly a great favourite with the student. Worthy of notice amongst the new matter are Ruhemann's discovery of the ninhydrin reaction for amino-acids, the urease method for estimating urea, the volumetric process for estimating sulphates, and the picric acid colorimetric method of Lewis and Benedict for estimating the sugar in the blood. This latest edition is a worthy successor of previous ones; the general outlines, a very difficult subject, are clearly stated and presented in a sequence which the student in the physiological laboratory will appreciate.

Authentic Dreams of Peter Blobs, M.D. Dunelm, and of Certain of his Relatives; Told by Himself, with the Assistance of Mrs. Blobs. London: Longmans, Green, and Co. 1916. Pp. 42. Price 1s. net.—Although this little book is published pseudonymously, it is not difficult from internal evidence to identify the writer. It is written with the praiseworthy object of assisting the funds of the Prisoners of War Help Committee, 5 and 7, Southampton-street, Strand. Of the dreams related the two first are the most striking, but what is chiefly notable in all of them is that they are free from the inconsequence which is so marked a feature of the dreams of most of us, an admirable example of which in literature is the dream in Kipling's "Brushwood Boy." The little book is cheap, it is quite worth reading, and any profits will go towards a worthy object. Therefore we hope it will have a large sale.

JOURNALS.

The Philippine Journal of Tropical Medicine, Vol. XI., No. 1.—To this number of the *Journal* Dr. E. R. Ruediger, of the Bureau of Science, Manila, contributes an article in which he describes some experiments he made with the view of finding some chemical agent which would render serum sterile and keep it so, without interfering with the tests to be applied to it. It is well known to serologists that when human serum is sent from a distance for the Wassermann reaction, it sometimes arrives in an utterly unfit condition for the examination; occasionally it is even putrid. Dr. Ruediger experimented with phenol, lysol, tricresol, and chloroform, all of which were soon abandoned as unsuitable. A more prolonged trial was made of formalin and glycerine, but it was found that the former was not suitable for the preservation of human serum intended for the Wassermann test. Sera which gave moderately positive results before the addition of formalin yielded negative, or nearly negative, results after this agent had been added. Glycerine, however, kept the serum sterile and did not noticeably influence the Wassermann reaction, nor the Tschernogubow modification of it. A second article is also supplied by Dr. Ruediger to this number of the *Journal* and deals with the subject of Hæmolysis by Human Serum.—Dr. Maria Paz Mendoza-Guazon, of the Department of Pathology and Bacteriology, University of the Philippines, describes an interesting case, with three illustrations in the text, of infestation of a child aged 8 months with a comparatively rare species of tapeworm in the human subject, the *Dipylidium caninum*, which is parasitic in dogs and cats and other carnivorous animals. The author, as regards prophylaxis, recommends the exclusion of domestic dogs and cats from opportunities of coming in contact with young children, especially those playing on the floor, and the taking of measures to prevent infants from putting their fingers in the mouth after touching dogs or cats.—The last article in this number is furnished jointly by Dr. Daniel de la Paz and Dr. Faustino Garcia, of the Departments of Physiology and Pharmacology, University of the Philippines. It is an experimental study of the use of apomorphine for the purpose of aiding the removal of foreign bodies from the respiratory passages, particularly from the trachea. This method is still mentioned in some standard text-books on pharmacology, the claim being that, as the result of the administration of apomorphine, coincidently with the act of vomiting, violent movements are produced which expel, or at least facilitate the expulsion of, the foreign body from the respiratory tract. Experiments to test this claim were carried out on dogs, but the authors were led to the conclusion that the use of apomorphine does not facilitate the removal of foreign bodies from the trachea.

Reports and Analytical Records

FROM
THE LANCET LABORATORY.

ZOEL ANTISEPTIC.

(AGENCY: G. LYNCH, WHITEHALL HOUSE, 29-30, CHARING CROSS, S.W.)

AMONGST boron compounds little attention appears to have been given to the monoborates, which bear a relation to diborates—e.g., borax—similar to that which carbonate of soda bears to bicarbonate of soda. The basic borate would, however, appear to possess valuable and distinctive antiseptic and deodorant properties which do not belong to the diborate or the free acid. We have recently had submitted to us a fluid preparation of monoborate of soda which, according to recent observations, has given most encouraging results in the treatment of wounds and in general antiseptic use. Some emphasis is laid upon the fact that it is alkaline which might imply irritating qualities. But this does not appear to be the case, while, of course, on account of its alkalinity it permits a free flow of lymph without causing it to coagulate or form incrustations. We have received some practical testimony on these points from hospitals where this monoborate fluid has been used in cases of wounds. The coagulating properties of an acid antiseptic would give preference to the use of an alkaline antiseptic so long as it is free from irritating properties, and that appears to be a favourable feature of the monoborate, which is besides a deodorant. The collaboration of an alkaline condition with an antiseptic means also that at the same time a detergent and cleanser is being used, encouraging the healing process. This development of the monoborates for antiseptic use, either in the form of potassium or sodium salt, is due to Mr. Charles Billing. The solution is quite stable and can be used if required warm. The hypochlorites, of course, are not stable under these conditions. There seems to be an interesting and important future in antiseptic work for the monoborates prepared in this way. Both a fluid and a dry salt are made.

BUTYL NITRITE.

(EVERITT AND CO., LIMITED, SOUTHALE, MIDDLESEX.)

We cannot trace any reference to the use of normal butyl nitrite in the same way that amyl nitrite has been employed in therapeutics, but the suggestion is of interest that the butyl nitrite might have advantages over its higher homologue and other nitrites which, as is well known, dilate the vessels and lower the blood pressure. The specimen submitted to us was a pale yellow oil which showed a boiling-point of about 68° C. It is, of course, somewhat more volatile than amyl nitrite and vaporises more easily, and a few seconds' inhalation causes the face to be flushed and a distinct effect on the pulse is accordingly produced. The preparation claims some attention as it may prove to have advantages over amyl nitrite derived from an alcohol of higher molecular weight. Toxicity decreases with reduction in molecular weight in many cases.

"KEPLER" COD-LIVER OIL WITH MALT EXTRACT AND CREOSOTE.

(BURROUGHS, WELLCOME, AND CO., SNOW HILL BUILDINGS, LONDON, E.C.)

This preparation represents the highly nutritive and digestive qualities of a malt extract prepared on scientific lines, of a refined cod-liver oil, and, lastly, of creosote, which possesses antifermentative properties. The combination is known to be of value in the treatment of phthisis, and it has the advantage of possessing an attractive flavour rather than a disagreeable one. In those cases in which it is desirable to help the nutritive needs of the patient—in wasting diseases generally—this preparation is, no doubt, of service.

BRITISH-MADE LANOLIN B.P.

(LONDON PHARMACEUTICAL REFINERS, LIMITED, MARTIN'S YARD, ENDWELL-ROAD, BROCKLEY, S.E.)

We have carefully examined this specimen of lanolin and we find that it answers all the requirements of the British Pharmacopœia. According to our examination it contained only 0.14 per cent. of moisture and 0.08 per cent. of mineral matter. These results are a long way below the limits set

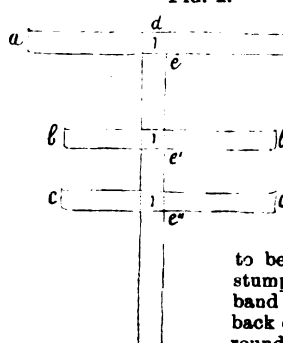
out in the official demand. Further, we found that its acidity in terms of oleic acid was only 0.42 per cent., against a presumable limit of 0.7 per cent. It has been pointed out that in the test for acidity in the British Pharmacopœia it is recommended to make a solution in ether of 0.2 gramme for titration with N/10 alkali which would place the limit of free (oleic) acid at 7 per cent. It is an obvious slip; a solution should be made of 2 grammes and then the limit becomes 0.7 per cent. This matter is of some importance, as any increase in the amount of free fatty acid in lanolin is opposed to its value as a basis in many directions.

New Inventions.

A NEW BANDAGE FOR AMPUTATION STUMPS.

THE object of this bandage is to keep dressings on the stump after amputations in the lower limb; slight modifications of it will serve the same purpose in the case of the upper limb. Four pieces of domette or flannel are used; the width should be about 4 in. The exact measurements will vary with the patient. The band *a* in Fig. 1 should go round the waist above the iliac crests; and *b* and *c* round the stump. It will be found better for *b* and *c*

FIG. 1.



to be nearer the lower end of the stump, as shown in Fig. 2. The band *d* should pass down the back of the thigh, then be brought round the bottom of the stump,

and fixed anteriorly by means of safety-pins (as shown in Fig. 2 at *e'* and *e''*), and finally to the waist-band at *e*. The junction of the bands *a* and *d* can be made with safety-pins or, better, by sewing

with cotton. In the case of a stump below the knee or the elbow the band *a* will, of course, be made smaller and go round the parts above the joint. In the application of this bandage (3 inches wide) to the upper limb above the elbow-joint the point *e* should be about the middle of the band *a*, which should be crossed over the shoulder in a figure of eight and fixed with a safety-pin round the neck. Point *e'* will be rather near to *e*; the band *d* should be brought down the inner side of the arm round the stump, and fixed with safety-pins on the outer side of the arm to the bands *a* and *b*. A 3-inch roller bandage should be first applied to approximate dressings to the stump, and then the bandage described above applied over it.

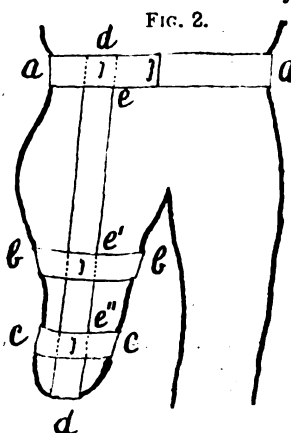


FIG. 2.

W. S. RICHARDSON,
Captain, R.A.M.C. (T.).

AN IMPROVED SUTURE FORCEPS.

THE improvement in the suture forceps as shown by the illustration consists in curving Moynihan's forceps on the edge, thus removing the obstruction to the line of sight.



The advantage is at once appreciated when the instrument is in use. It is now obtainable from Messrs. Allen and Hanburys, Limited, Wigmore-street, London, W.

Orpington, Kent.

E. W. DIVER, M.D. Durh.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 11, 1916.

The Financial Interests of Medical Men on Service.

For the medical man it is always "business as usual," for whatever the circumstances or the environment there remains the same twofold task—he has to prevent disease and to remedy it. At the outbreak of war the words "business as usual" became a catch-phrase with writers and speakers. It was used to imply in the briefest form the greatness of this country, its powers of resource, and its equable temperament; and there is no doubt that in this way it became a sufficiently mischievous text, doing appreciable harm to our military efficiency in the preliminary stages of the conflict. For those who preached from the catch-phrase fostered a spirit under which things were taken too easily; thus recruiting was restricted, and the men who hung back thought their behaviour justified, and thereby lost many months of valuable training. It is true that the words soon ceased to be used, when their mischievous teaching was perceived; but the effect of this teaching remained and lay behind the opposition to compulsory military service.

Quite properly the words "business as usual" can be applied to the course which medical men should pursue now as always. The medical profession continues during the war to do that business of preventing and remedying disease and injuries which it was called upon to do before the war. The circumstances in which we work have altered only in appearance, for is it not true that the thousands of medical practitioners who are now with the colours are there because it is there that the disease and the injuries of a large proportion of our male population are to be found? But the fact remains that the more fragile section of the population stays behind, and on the medical men who remain to care for them there falls the grave responsibility of increased work with no commensurate increase of income. Complaints have reached the Central Medical War Committee that some practitioners are not recognising as fully as they should do their moral obligations to professional brethren who have undertaken military service. The Committee in expressing the opinion that these obligations should be cheerfully and generously discharged, as a privilege as well as a duty, are speaking for all the profession, and it must be remembered that the members of the Committee have exceptional facilities for knowing the problems that have arisen out of the existing dislocation of civil practice. Many medical men have made and are making very great sacrifices for their country, and the Central Medical War Committee suggest that thoughtlessness usually accounts for the fact that some of those who

remain at home are profiting unduly by their neighbours' patriotism. There is, however, much evidence to show that the private practices of many men on active service have almost disappeared. This is mainly because practitioners do not take the trouble to ascertain whether new patients were or were not in the habit of consulting doctors now on active service, and the Committee have devised a procedure which, if carried out, will minimise the loss which must in any case fall on those who leave their practices for any considerable period. In so doing, and not for the first time, the Committee are rendering service to the medical profession of a practical kind. They supply medical men with a scheme under which they can watch over the interests of brother practitioners on military service in the most convenient way, and they deprive indolent men of any excuse for taking no heed to the existing position, and for drawing profits from their want of thought.

We publish on p. 844 of the present issue of THE LANCET the procedure which the Central Medical War Committee propose might be followed, with suitable variations in different areas, for safeguarding the practices of medical men on active service, and we trust that all who are concerned will give the suggestions the closest possible attention. The regulations have been very carefully drawn up and an anxious attempt has been made to cover, under one or other of 13 headings, the main defects that are likely to arise where a medical man has gone on active service and left his practice to be managed for him by his professional colleagues. We would draw special attention to the regulation dealing with a vacancy which occurs from the death of a practitioner on service. Our columns are recording only too frequently these tragedies, and the honour of the profession is especially involved in seeing that any surviving relatives of the deceased officer shall benefit by the sale of his practice. The number of medical men who have already been killed while on active service is so large as to make it right that definite arrangements should be made in all areas to deal with a possible event. The needs of medical practitioners who have suffered financially through naval or military service must be taken under serious consideration by their brethren.

Local Tetanus.

THE control of tetanus by the prophylactic injection of antitoxin will justly rank as one of the triumphs of preventive medicine in the present war. Few wounded men now escape the injection, and the disease has become relatively rare in spite of the abundant infection which must still occur. But although tetanus has been scotched it has not been killed; cases are still occurring, though in small numbers. There is strong experimental evidence, as the recent revised Memorandum issued by the War Office Committee for the Study of Tetanus shows, that in about ten days the immunity conferred by the primary injection of antitoxin is to a great extent lost. Sir DAVID BRUCE, 12 months ago, concluded, upon an analysis of 231 cases of

tetanus treated in home military hospitals, that a prophylactic dose of antitetanic serum was at that time rarely given.¹ Now it is seen that a single dose may be insufficient. It is desirable, therefore, to draw attention to a result of the preventive administration of serum—namely, the occasional occurrence of the disease in spite of a prophylactic injection but modified by the latter to such a degree that it may become difficult of recognition. For some time past cases have been noted, in this and other countries, in which persistent spastic rigidity of a wounded limb has set in, lasting for weeks or even months, and occasionally ending in permanent contracture. Trismus may be quite absent in these cases and the condition has been so unlike the usual clinical picture of tetanus that the diagnosis has remained in doubt. Last November we published notes of three such cases by Lieutenant-Colonel R. D. RUDOLF and notes of another case by Mr. R. ATKINSON STONEY; our Paris correspondent in our issue of Feb. 19th called attention to the occurrence of somewhat analogous cases of "late tetanus"; other similar instances have since been recorded, and it is probable that they are occurring wherever the prophylactic injection of antitoxin is systematically practised. It is now clear that these cases of local spastic rigidity in wounded limbs are modified tetanus. There are two good reasons for this belief. The first is that in some of them the more ordinary symptoms of tetanus are later added to the local spasm; trismus, for instance, may supervene after some days or weeks, while in most cases, if not in all, careful examination detects some of the nervous manifestations of tetanus beyond the limits of the part primarily affected. The second reason lies in the identity of the condition with that which may be produced experimentally with tetanus toxin in animals. In the cat, an animal relatively insusceptible to tetanus, a sub-fatal dose of toxin produces a highly persistent tonic spasm of the limb injected, and nothing else. The same is true of the guinea-pig if the dose of toxin is accompanied or shortly followed by a sufficient dose of antitoxin. The man, like the guinea-pig, seems to be reduced by the dose of antitoxin to the level of insusceptibility naturally occupied by the cat.

The subject has recently been illuminated by Dr. MONTAIS in the July number of the *Annales de l'Institut Pasteur*, as well as by Dr. COURTOIS-SUFFIT and Dr. R. GIROUX in a monograph of which a review appears in another column. Dr. MONTAIS has collected from French sources alone no less than 21 cases of purely local tetanus, without trismus, as well as a number of similar cases in which trismus and other general symptoms later supervened. All were in persons who had received a prophylactic injection of serum. Although the form of tetanus which begins locally and is followed by trismus has long been known, pure local tetanus is a pathological novelty in man. Dr. MONTAIS states that the first case was recorded in 1913. The condition, he claims, is the creation of preventive serotherapy; tetanus tends to assume

this form the more frequently the shorter the interval between its onset and the prophylactic dose of serum. The influence of the serum gradually fades and Dr. MONTAIS distinguishes four degrees of modification according to the respective predominance of local or general symptoms. With the increasing involvement of the higher centres the mortality rises; contrary to the rule in ordinary tetanus, the prognosis becomes worse the later the disease arises in the protected man. Dr. MONTAIS's first group is that in which the tetanus remains limited to the region of the wound, or at the most shows some extension to the centres at the same spinal level: the pontine and bulbar centres escape altogether. It is this form which alone deserves the name of strictly local tetanus, and he finds it almost confined to the first month after the prophylactic injection. Sometimes the incubation period was only a few days, but in one case it was three months. Only two of his 21 cases died. In his second group, more frequent than the first, the tetanus is still local in its onset, but the protection of the higher centres is no longer complete, and after an interval of days or weeks, trismus and other general symptoms appear as a secondary phenomenon, often of no great severity: the disease is still in the main local. Such cases, says Dr. MONTAIS, may occur at any time during the first two months after the preventive injection, and the mortality is somewhat higher than in the first group. In the third and fourth groups, rarely seen within the first month, but apt to occur from the second month onwards, the protection of the higher centres is much less complete. The first obvious manifestations of the disease are trismus, cervical rigidity, and other well-known signs of general tetanus; a local onset in the wounded limb is no longer seen or at least no longer attracts attention. In the third group, although the protective action of the serum is largely exhausted, some residue of immunity still modifies the severity of the attack; the course of the disease may be slow and characterised by persistent spasticity rather than by severe crises. The mortality is here much higher—according to BAZY from 33 to 50 per cent. In the fourth group the tetanus is of ordinary type, all protection having vanished.

It is plain that this classification is an arbitrary one, and that the groups shade into one another, nor can the dates of occurrence of the different types be more than a general indication, since, as Dr. MONTAIS himself admits, the rate at which protection fades is a variable one. The tetanus bacillus is implanted in wounds usually, if not always, in the form of spores, and these may germinate and give rise to the vegetative organism, with its production of toxin, at any time up to many months after implantation, or they may never germinate at all. They are very difficult of destruction, and the wound may heal, leaving them still intact. The reawakening of such dormant spores is the cause of late tetanus, and this may occur long after the effect of prophylaxis has faded. The question arises why early tetanus in the protected man should assume the local form, and the

¹ THE LANCET, Oct. 23rd, 1915, p. 901.

answer seems as follows. It is generally held, since the work of MEYER and RANSOM, that the motor neurons are accessible to tetanus toxin only at their peripheral terminations in the muscles; the central nervous system is thus attacked up the motor nerves. The main route from a wound is hence obvious, and there is no difficulty in understanding the early involvement of those spinal centres corresponding to the site of the wound. Simple local tetanus is, however, practically unknown in the unprotected man; as a rule the centres in the pons and medulla suffer earliest, probably because in man they are the most susceptible. The route to these centres, except where the seat of infection lies within the realm of the cranial nerves, is a roundabout one through the blood-stream. In the protected man the antitoxin is circulating in the blood, and has therefore a far better chance of shielding the higher centres than the spinal ones directly accessible from the wound. The early case of local tetanus is, as Dr. MONTAIS urges, one in which the production of toxin is early and copious; but in the protected man, instead of a rapidly fatal issue, we see the violence of the attack spent upon the lower spinal centres because the higher ones are shielded. The mortality is low because the prognosis depends largely upon whether or not the higher centres are attacked. The gradual fading of protection, as time goes on, explains the reappearance of trismus and other general symptoms, till in the later stages the disease again runs its usual course. The combination of circumstances which leads to local tetanus is an uncommon one, but the explanation outlined above seems to be satisfactory.

With regard to the treatment of local tetanus, it would appear that the condition tends to be chronic, and that it is not readily affected by the administration of antitoxin. Dr. MONTAIS suggests that, since the fact that the tetanus is local proves the higher centres to be shielded, it will suffice to keep up the existing protection by the subcutaneous exhibition of serum. He quotes GOVAERTS, however, as affirming that the intrathecal route is particularly useful in this form of tetanus. There may not be the same urgency for the administration of antitoxin by the intrathecal route as exists in general tetanus, but this route would still appear to offer the best means of overcoming the local form of the disease. The first authorities in all countries advise that, to prevent tetanus in the wounded soldier, the protection given by the primary prophylactic dose of serum should be reinforced by its repetition at weekly intervals so long as the condition of the wound demands it. The War Office Memorandum, already mentioned, recommends this course in cases of long-continued septic wounds, particularly those caused by shell or bomb, and adds that the danger of anaphylactic shock, which may have deterred surgeons from this practice, is negligible when prophylactic doses of 500 U.S.A. units contained in 3 c.c. of horse serum are given subcutaneously, whatever the interval after the preceding injection. Even if the disease cannot thus be wholly prevented, the recorded cases of its conversion into the local form show that it may sometimes be robbed of its worst terrors.

Annotations.

"No quid nimis."

SALT IN THE DIETARY.

THE decision contained in an Army Order issued recently to reduce the ration of salt from half an ounce to a quarter of an ounce brings to the front the whole question of the rôle of salt in the dietary. The Order undoubtedly allows for the actual daily requirements of the body, since this has been calculated to be not more than an intake of 2 grammes, while a quarter of an ounce amounts to a little over 7 grammes. Few of us are concerned to think that by taking salt with food we are keeping up a saline equilibrium; we only value it for its salinity and in practice as a condiment, and its dietetic importance probably rests on the fact that it makes so many foods palatable. The foods which furnish salt are generally the animal foods, for sodium chloride forms a comparatively small percentage of the salts present in the cereals, tubers, and pulses. These contain chiefly potassium salts. Few foods, however, possess a natural salinity of their own; the oyster may be mentioned as an exception. The daily food ingested provides sufficient sodium salts for the body needs, yet such food is not salt to the taste, and this consideration would seem to confine added salt to the category of a condiment. Its action as a condiment deserves, however, further study, because the development of flavour which the addition of salt induces is undoubtedly due to increased osmotic action. In other words, the addition of salt conspires to produce an isotonic fluid with more rapid travelling activities, stimulating salivary flow and subsequently the secretion of the gastric fluid. The evidence, therefore, is in favour of the use of salt, not because there is a shortage of this in a mixed diet, but because it increases the palatability of food and likely enough its absorption value. The Army Order allowance seems small, particularly if the ration should include a preponderance of unsalted vegetable ingredients, but, on the whole, salt is extravagantly and wastefully employed.

A NEW METHOD OF STERILISATION AGAINST PEDICULI.

Professor Alfonso Muto, director of field hospital No. 59 of the Italian Army, has devised a simple and effective method of sterilising the soldiers' clothes as a prophylactic measure against exanthematous typhus.¹ He claims that in a 10 per cent. solution of creoline we have a substance which has the advantages of not being inflammable nor harmful to human beings, nor having a disagreeable odour. It does not damage the texture of the clothes or affect their colour, but, on the other hand, protects them against moth. It is easily obtainable, cheap, and destroys the parasites and their eggs in a very short space of time. The only apparatus required consists of a collapsible wardrobe, light and easily transportable, having a boiler of about 18 litres capacity which is connected by a pipe to the interior and can be heated over an ordinary wood fire. The clothes are hung up in the wardrobe and the creoline solution boiled; the clothes are withdrawn after another quarter of an hour, when they will be found to be hardly damp. Moreover, Professor Muto has observed that small needle-shaped

¹ *Annali d' Igiene*, August 31st.

crystals of naphthalin are deposited on the surface of the articles, which have an active and beneficial prophylactic action, since they prevent for a considerable period any fresh invasion of the parasite. This method is said to have overcome many of the difficulties met with in organising an antipedicular prophylaxis among troops on active service. That the soldier must remain stripped during the whole time occupied in disinfecting his clothes is an objection which has its palliating circumstances, since the interval may be utilised in applying some antiparasitic inunction in a tent.

THE "COMPLUETIC REACTION" (WASSERMANN) IN 100 CASES OF AMENTIA.

A USEFUL and suggestive investigation of the causative factors of idiocy and imbecility has been conducted by Mr. H. F. Stephens, and his results are incorporated in a paper recently read before the Psychiatry Section of the Royal Society of Medicine. His material consisted of 100 cases of amentia, of which 76 were cases of primary amentia and 24 of secondary amentia. Included in these groups were 11 cases of mongolianism, 4 of cretinism, 7 of amentia with paralysis (hemiplegia, &c.), 17 of amentia with recurring convulsions, and 3 of amentia with hydrocephalus. The inquiry was conducted with reference more particularly to the presence or absence of the Wassermann reaction as indicative of syphilitic activity. The mere fact that the great majority of the patients examined came under institutional discipline and observation at a very early age is sufficient to exclude the likelihood of any direct acquisition of that disease, apart from the absence of all the physical signs and symptoms of acquired syphilis at any period of their lives, so that where the Wassermann reaction was present the patients may be declared to be the victims of intra-uterine or congenital syphilis. Of the 100 cases, no fewer than 42 gave a positive reaction of varying strength. Mr. Stephens has told at considerable length the exact technique followed and the controls adopted, whereby the trustworthiness of his findings was thoroughly tested. It is interesting to note that in none of the positive cases were any of the accepted signs of congenital syphilis discovered, a fact which has been remarked by other workers in the same field. In view of the obvious truth that not all children of syphilitic parents are aments, the question arises whether the manifestations of congenital syphilis bear any relation to the time of onset of the infection *in utero*. According to Mr. Stephens, the majority of congenital syphilitics bear evidence of epiblastic or mesoblastic infection, which suggests a comparatively late intra-uterine onset, whereas amentia—i.e., such amentia as is here described—associated with a positive Wassermann reaction in the blood, is, broadly speaking, equivalent to arrest of brain development, and suggests a very early embryonic infection. A further matter of some interest is the determination of the part played by the syphilitic virus in the establishment of the amentia: is its solitary action responsible for the mental defect, or are other factors implicated? Mr. Stephens specifies such factors as neuropathic inheritance, alcoholism, consanguinity, antenatal adverse mental or physical states of the mother, and finds that in no one of his cases was the syphilitic virus unassociated with at least one of these etiological components. He draws the cautious conclusions that it appears to be the essential factor in 25 cases, the exciting or deter-

minant factor in 6, an auxiliary or augmentary factor in 11. In his series of 11 mongols 3 gave a positive reaction; 2 of 4 cretins and 10 of 17 epileptic idiots gave a similarly positive result. It is difficult to know what significance to attach to the findings in the mongols and cretins. The mongol type, from both psychic and somatic view-points, is so well defined, so systematised, that syphilis can scarcely be regarded as an essential factor if only three of 11 cases are positive, and there would appear to be equal difficulties in the way of regarding that factor as determining or even auxiliary. Mr. Stephens says little in his paper of the hypothesis of mere coincidence, yet in regard to both cretins and mongols it may be asked whether the occurrence of a syphilitic taint is not simply accidental. In his summing-up, indeed, he declares that in none of his cases did the syphilitic virus appear to be *wholly* responsible, but seemed rather to have been associated with and to have acted upon "inherently defective, diseased and degenerated, or damaged tissues." As the Belgian Professor Bordet was the first to discover and establish the essential principle of the "Wassermann" test, Mr. Stephens holds that the proper name should be the "Bordet-Gengou phenomenon in syphilis," but he prefers the simpler term "compluetic reaction," coining the word "compluetic" from the two words "complement" and "luetic."

TRICHINOSIS AND NEOSALVARSAN.

IT has hitherto been supposed that no direct measures could have any beneficial influence upon the trichinae when once the muscles had been invaded, but a striking case of, at any rate, immediate relief, following an intravenous injection of neosalvarsan, in a case of trichinosis is reported in the *Journal of the American Medical Association* (1916, lxxvii., p. 1086) by Dr. J. B. McNeerthney and Dr. W. B. McNeerthney. The patient was a German, aged 33. He had eaten for some days some undercooked ham, and was in the fifteenth week of the infection when admitted into hospital. He was greatly emaciated, prostrated, and had lost 60 lb. in weight. The temperature was 100° F. The forearms were flexed; restriction of movements at the wrist; rigidity of the neck muscles and even difficult deglutition. The lower limbs showed cyanosis and oedema. There was severe anaemia and the eosinophiles were increased to 35 per cent. A section of muscle fibre showed numerous living trichinae in every field. An intravenous injection of 0.6 gramme¹ neosalvarsan was given. A marked chill followed, but within 48 hours the patient felt less pain than he had had for months. Within a week he was able to sit in a chair and could extend his forearms. Complete and uneventful recovery followed. This is a striking therapeutic triumph in one instance, and its effects in other cases will be awaited with interest.

THE TREATMENT OF PROSTATIC HYPERTROPHY BY NERVE-SECTION.

AMONG the papers read to the members of the Dutch Medical Association at the summer meeting at Leyden was one² by Dr. D. Schoute on the treatment of hypertrophy of the prostate by section of the nerves in the spermatic cord. The idea of the treatment was suggested to Dr. Schoute by the

¹ The authors write 0.66 gramme but from the references given and the absence of any remark calling attention to the minuteness of the dose, it would seem that 0.6 gramme is intended.

² Nederl. Tijdschr. voor Geneesk., Amsterdam, 1916, 1., 1356.

rapid relief from retention of the urine that sometimes follows the operation of castration. This led him to treat a patient with hypertrophied prostate who was suffering from retention by injecting novocaine into the spermatic cord in order to cut off the transmission of nervous impulses from the testes to the prostate. The injections were successful, as they relieved the retention by enabling the patient to pass urine again; but they failed in so far as they required repetition every three hours, by which time their effects had passed off. The operation proposed by Dr. Schoute aims at exposing the spermatic cord, separating off the vessels and vas deferens, and cutting through the tissues of the cord that remain. Discussing his results, Dr. Schoute remarks that he finds it convenient to divide up his prostatic patients into two classes, irrespective of the stage they had reached—namely, those without and those with prostatic pains. He has applied his operation in 31 cases of hypertrophy of the prostate with retention of urine or residual urine. So far as his classification goes, 17 of the patients had severe prostatic pain (9 with cystitis or prostatitis), 12 had little or no pain (3 with slight cystitis), and 2 were demented whose sensations could not be ascertained. Six of his patients died within three weeks of the operation; all were cases with complete retention. The operative results are set out with the patients in three groups. Group A contains 5 patients who had pain and complete retention; 2 were cured, 2 were unimproved, and 1 died. Group B comprises 12 patients with pain and residual urine amounting to from 1 to 18 oz.; 5 were cured, 2 improved, 3 unimproved, and in 2 the results were uncertain. Group C contains 12 patients without pain, but with complete retention; 9 were cured by the operation; 3 died. Both the demented, who also were hemiplegic, died. Dr. Schoute concludes that this operation is indicated for the relief of patients with hypertrophy of the prostate who do not suffer from severe prostatic pains, adding that cystitis and prostatitis lessen the probability that it will be successful. The operation is not found to disturb the sexual functions; Dr. Schoute has not observed it to lead to a reduction in the size of the hypertrophied prostate. A discussion followed the reading of this paper; the opinions expressed as to the value of the operation advised by Dr. Schoute were unfavourable. Dr. Van Cappellen had performed it in 12 cases without a single successful result; Dr. Vermeij and Dr. Montaigne each had two cases to record, all of them unsuccessful. Dr. Laméris observed that the operation had been tried 20 years ago, and had then been found wanting; he criticised Dr. Schoute's classification of his patients and the scarcity of the clinical details of his cases. Dr. Sträter remarked on the high immediate mortality of the operation—6 deaths among 31 patients. In the course of his reply Dr. Schoute said that it often was very difficult to free the spermatic artery from the cord, and expressed the belief that the treatment of prostatic hypertrophy by section of the vas deferens was a failure if nothing more than the vas was divided.

At a meeting of the Medical Society of London to be held on Monday next, Nov. 13th, at 8.30 P.M., Captain Langdon Brown, R.A.M.C. (T.), will open a discussion on "Epidemic Nephritis." Among others, the following have promised to take part in the discussion: Sir William Osler, Lieutenant J. S. Dunn, R.A.M.C., Dr. Samuel West, Mr. J. E. Adler, Mr. W. H. Jessop, and Dr. T. J. Horder.

REPORT OF THE COUNTY MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER OF LONDON FOR 1915.¹

THE present is Dr. W. H. Hamer's fourth annual report in his dual capacity as medical officer of health and school medical officer. It relates to the year 1915 and gives account of the sanitary and educational work of the County Council in relation to the war. As in previous reports, the subject-matter is arranged under two headings, dealing respectively with Public Health and Elementary Education. In the following comments we shall adhere to the same arrangement.

PART I.—PUBLIC HEALTH.

In this section of his report Dr. Hamer acknowledges that "the health of London during 1915 does not compare very favourably with that of quite recent years—not so much on account of any influence of the war as owing to increase of deaths at relatively high ages attributable to a prevalence of influenza and respiratory diseases during the winter months." In many respects this report is very encouraging, inasmuch as it confirms the evidence of previous years as to steady and substantial administrative progress. In spite of difficulties inseparable from existing war conditions, a commendably high standard of efficiency continues to be maintained in the sanitary service of the county. Nevertheless, Dr. Hamer rightly insists that exceptional efforts are still needed in order to deal satisfactorily with war emergencies, which, far from diminishing, still threaten to increase *pari passu* with the duration of hostilities. At the date of the report five metropolitan medical officers of health and 53 sanitary inspectors had already been detached for war service. The inspecting staff was therefore depleted to the extent of 16 per cent. Probably for reasons of economy the tabular portions of this report have been curtailed. Nevertheless, all that is essential in the statistical contents of previous reports has been continued in the summary tables now presented, for the means of compiling which Dr. Hamer acknowledges his indebtedness to the district medical officers of health.

Population changes.—In the course of 1915 the population of London experienced important changes, not only in respect of number, but of age and sex constitution and local distribution. Consequently it has become necessary to calculate mortality rates upon a population from which deduction has been made for men on active service, the deaths having been similarly reduced so as to relate to civilians exclusively. The total civil population was estimated at 4,310,030. In order to obtain data relating to this number the deaths among members of His Majesty's forces have been excluded, and the rates for the civil population thus computed. The rates now given are the best that can be obtained in present exceptional circumstances, but caution is obviously requisite in comparing these with the rates of normal years. The civil population is deficient in males of military ages (from 19–40 years), at which time of life mortality is considerably below that of the normal aggregate population. For this reason the rates calculated on the civil population are to some extent overstated.

Marriage-rate.—The metropolitan rate of marriages has been rising almost steadily for several years, the rate having increased from 16.9 in 1909 to 19.2 in 1914. The estimated *civil population* cannot properly be used for calculating the marriage-rate, since the numbers married include many men on active service. But, taking a *probable population* of 4½ millions the rate for 1915 would be 25.9 per 1000, which is the highest rate on record. The bulk of this exceptional increase is directly attributable to the war. It is believed, however, that a considerable number of persons registered as married in London were not actually resident in the county.

Birth-rate.—A serious fall in the birth-rate of London still continues. It was 23.6 in the year under notice, against an average of 25.0 in the quinquennium 1909–13. Dr. Hamer devotes considerable attention to the steady fall of the birth-rate, which has been practically continuous for the last 40 years. A theory which has met with some acceptance ascribes this—not to natural causes, such as the high

¹ Published by King and Son, Westminster. Pp. 40. Price 1s.

rate of marriages, economic factors, emigration, &c.—but to the artificial limitation of families. One of the most cogent reasons against this theory is the fact that the fall is widespread throughout Europe, and affects certain other civilised communities. In this connexion the medical officer of health quotes Mr. Uday Yule, who has long been engaged on a critical study of the subject. In a recent communication this expert statistician has observed:—

It was precisely the extraordinary similarity of the changes in very widely different countries that made it very difficult for him to accept the purely moral theory. If there had been a change in that way—and possibly it was the case—why did the changes take place in so many different countries in almost the same year? People did not change their morality in a large number of different countries, or even in one country, at a given point of time without some extremely definite cause, and he was still inclined to regard economic factors of some kind as lying behind it.

For the purpose of his study Mr. Yule examined various economic factors—wages, consumption of commodities, exports and imports, &c.—and was led to attach special importance to the correlation of the marriage- and birth-rates with the course of prices. He concludes:—

I feel myself almost compelled to the belief that the course of prices, either directly by its influence on consuming power and on profits, indirectly by effects on trading, or more indirectly (if it be possible) as an index to the course of some other variable, has been throughout the past century the factor of most outstanding importance in the rate of reproduction of the race.

This controversy is by no means settled, and, having regard to its vital importance, we shall welcome further discussion of the subject.

Deaths and causes of mortality.—Calculated on the estimated civil population the deaths among civilians in the administrative county were equal to a rate of 16.8 per 1000 living, as compared with 14.6 in the year 1914. The increased deaths appear to be due in greater degree to unfavourable weather in the winter of 1915 than to excess of deaths at military ages attributable to the war. The increased mortality among children under 5 years was mainly due to measles and respiratory affections in the winter months, whilst at ages above 55 influenza, with its chest complications, was responsible for the greater part of the increase.

Infectious Diseases.

The incidence and fatality of the more familiar infectious diseases are set forth in detail in the periodical returns of the Registrar-General; they are therefore dealt with summarily in the present report. Measles was a notifiable disease last year in Paddington only. The deaths in London from that disease numbered 2286, or 910 more than in 1914. The incidence of measles appears to have been exceptionally heavy upon the Western and South-Western boroughs. The civilian cases of scarlet fever notified last year numbered 16 974, and were fewer by 8041 than the number in 1914. The decreased prevalence of this disease was shared by each of the metropolitan boroughs with the exception of Shoreditch and Bethnal Green, where the cases were greatly in excess. The notified civilian cases of diphtheria numbered 909, or almost exactly the same as in the preceding year. In London as a whole the prevalence of diphtheria appears to rise and fall with that of scarlet fever; but this is not true of the metropolitan areas separately. In 27 out of the 29 boroughs the scarlet fever cases notified last year showed a marked decline as compared with 1914, but in the case of diphtheria only 16 showed a decline. This difference is apparently associated with greater tendency to persistence in particular places in the case of diphtheria as compared with scarlet fever. Whooping-cough was a notifiable disease last year in Holborn, Lambeth, and Greenwich; the deaths in London from this disease numbered 1158, or 237 more than in 1914.

Enteric fever.—Since the beginning of the century the incidence has been low in London, especially in the last ten years. The decrease observed in London has not been confined to that county, or indeed to England and Wales. Speaking generally, it appears to have been common to most European countries. During the first half of the period elapsed since 1900 the marked autumnal rise previously manifested from year to year has steadily diminished in extent, and since 1908 it has been evident in two years only. The first year of this series of 15, in which a marked failure occurred in the usual autumnal prevalence, was 1907, the autumnal excess being then smaller

than in any previous year back to the introduction of notification. Since 1911 it has almost entirely disappeared. Notwithstanding the return to this country of convalescent soldiers and the concomitant abnormal conditions of the time, no increase in prevalence of enteric fever was observed last year. The number of attacks notified among civilians was 607, and was considerably below the number reported in 1914. From inquiries made it appears that fewer than 20 deaths from enteric fever occurred during the year among the military population of London; from which circumstance it may be inferred that if the whole of the military cases had been notified the total attacks in London during 1915 would still have been substantially fewer than in the preceding year. As in past years, Dr. Hamer has again been eager to obtain information respecting the suspected sources of infection in the reported cases, and in 380 instances he has been materially assisted by his district medical colleagues. The information thus acquired threw suspicion upon food (fish, shell-fish, &c.) in 143 cases, in 55 of which the patients were soldiers and in 5 Belgian refugees. In 43 cases infection appears to have been contracted outside London, and 57 cases were ascribed to contact infection; whilst in 74 instances the diagnosis of enteric fever was found incorrect. Dr. Hamer does not neglect to caution his readers that "in all these instances the grounds upon which the suspicions as to origin were based must be regarded as having only some degree of probability far removed in many instances from certainty."

Cerebro-spinal fever and influenza.—The order of the County Council requiring the notification of cerebro-spinal fever came into operation in 1907, since which date considerable attention has been directed to the etiology of that condition. During the seven years following the introduction of this measure the disease did not assume epidemic dimensions. In his last two reports Dr. Hamer has devoted considerable space to an examination of its probable relationship to influenza. In the first of these the attempt was made to discover whether the concurrence of influenza and cerebro-spinal fever was more frequent than mere chance coincidence would account for. The answer, it will be remembered, was in the affirmative.² In the last Army and Navy Report reference has been made to this subject. In that document Surgeon-General H. D. Rolleston remarks upon the coincidence with the outbreak of cerebro-spinal fever in 1915 of catarrh, influenza, tonsillitis, and sore-throat. He concludes that there appears to be a relation between the incidence of catarrhal affections on the one hand and of cerebro-spinal fever on the other. Further reports on the same subject are cited—one by Dr. Bruce Low and another by Captain Michael Foster and Captain J. F. Gaskell, of the Eastern Command. The last-named observer concludes that mild cases of cerebro-spinal fever may be unrecognised and classed as influenza, but that no proof exists that the former disease is ever so slightly marked as not to develop at least some of the diagnostic signs. This subject is of particular importance at the present time, in the interest not only of the civil community but of His Majesty's Forces at home and abroad. We therefore commend Dr. Hamer's instructive observations to the study of our medical readers.

Pulmonary tuberculosis.—Among the civilian population the deaths thus returned last year corresponded to a rate of 1.60 per 1000. This rate is not fairly comparable with that of 1.43 for 1914, when the age composition of the community was normal. Recruitment for the war reduced the proportion of healthy males aged 19–40, leaving in the civil population all those who had been rejected on account of phthisis, the result being to overstate the mortality based on the civil population when contrasted with that of the previous year. The increase in 1915 cannot properly be attributed to the war, for excessive mortality is also shown at ages both below and above the years of active service. In the year under notice 14,712 cases of phthisis, or 1755 fewer than in 1914, were notified in London. Systematic notification was not established until 1913, consequently uncertainty attaches to comparison of the returns; moreover, at the outset all cases, however far advanced, were notifiable as "primary," and some old-standing cases may in that way have escaped notification.

Anthrax.—This disease is of very rare occurrence in London, the reported cases in human beings having never exceeded nine in any year of the last five. Early in 1915

² See THE LANCET, April 15th, 1916, p. 833.

seven cases of human anthrax were reported. Infection by anthrax spores was traced to the use of shaving brushes made from goats' hair which had been consigned from abroad to a manufacturer in the Midlands, who used the hair for making shaving brushes.³ These are the first known instances of anthrax being traced to infection from shaving brushes; and but for the timely discovery of Dr. R. R. Elworthy, of the West London Hospital, and the administrative action subsequently taken, an outbreak of more serious dimensions might have occurred. As many of the infected brushes as could be discovered in London were collected and dealt with by the metropolitan medical officers of health, but a large number appear to have been distributed to dealers, both in the provinces and on the continent, and could not be traced.

(To be concluded.)

THE CONTROL OF VENEREAL DISEASES.

The Resolutions of the Royal College of Physicians of London.

At the Comitia of the Royal College of Physicians of London held on Oct. 26th two valuable resolutions with reference to the control of venereal diseases were passed,¹ copies of which have been sent to the Prime Minister, the Home Secretary, and the President of the Local Government Board. The first of these resolutions set out the opinion of the College that until the treatment of these diseases by unqualified persons is rendered illegal the measures for their control will be much hampered; the second was directed towards the prevention of the main inducement for the public to consult quacks and to try quack remedies—viz., the advertisements in lay papers. The resolution of the College took the form of an endorsement of recommendation 58 (iii.) of the Patent Medicines Committee of the House of Commons, which runs as follows:—"That all advertisements of remedies for diseases arising from sexual intercourse or referring to sexual weakness be prohibited." This recommendation has received the support of the Royal Commission on Venereal Diseases, and it is earnestly to be hoped that the Government will recognise the urgency of the situation. A great effort is being made, in unusually favourable circumstances, to remove the curse of these diseases from our population. Public money is to be spent with unprecedented generosity in carrying out immediately the recommendations of the Royal Commission on Venereal Diseases, and already the medical profession and the municipal authorities of many areas are organising the beneficent work. No factor which is generally and authoritatively acknowledged to be opposing the movement for the control of venereal diseases should be allowed to exist when it can be eliminated with ease.

The Scottish Regulations.

The Local Government Board for Scotland has, after three months' interval, followed the example of the English Board and issued regulations dealing with the treatment of venereal diseases. The Order bears the heading, "The Public Health (Venereal Diseases) Regulations (Scotland), 1916," is dated Oct. 26th, 1916, and is issued "to all local authorities in Scotland: and to all others whom it may concern." It differs only in minor details from the English Order, and directs that every local authority shall prepare and submit a scheme for the approval of the Board arranging for (1) a scientific report on material sent by medical practitioners for diagnosis; (2) the treatment in hospitals or other institutions or in their homes of persons suffering from venereal diseases; (3) skilled assistance in treatment to be placed at the disposal of practitioners; and (4) the supply to practitioners of salvarsan or other drugs for the treatment and prevention of venereal diseases. The local authority may make what provision it thinks desirable for public instruction. The Board undertakes to make grants in respect of approved schemes to the amount of 75 per cent. of the net outlay.

In a covering letter addressed to the clerk of the local authority the Board expresses its willingness to give the assistance and advice of one of its medical inspectors to any medical officer of health desiring such help, and suggests the desirability of combination among local

authorities for carrying out schemes. In another letter addressed to the secretary of the hospital, the Board trusts that hospital authorities will be willing to confer with local authorities in their area with regard to arrangements for treatment; any extra expenditure incurred in providing additional hospital facilities will be borne by the local authority, and while in so doing the hospital will be under the inspection of the Board, no interference in the administration of the hospital is contemplated. In case of shortage of medical staff the Board has received the assurance of the Army Council that wherever possible specially experienced officers of the Royal Army Medical Corps will be enabled to give such assistance at hospitals as their military duties permit. In a third letter addressed to the inspector of poor, the Board proposes to make grants in respect of special expenditure incurred by Poor-law authorities in carrying out treatment in their institutions, provided that a statement of the nature and extent of such treatment is submitted and approved. Appendices attached to the memorandum include excerpts from the Report of the Royal Commission and from the technical parts of Dr. Newsholme's memorandum issued by the English Board.

The Remuneration of Medical Officers of Treatment Centres.

The Council of the British Medical Association has drawn up a series of resolutions in regard to the remuneration of the medical officers attached to the proposed clinics for venereal diseases. These resolutions, which have been circulated to the branches for adoption by the next Representative Meeting, are as follows:—

1. That whole-time senior medical officers of clinics should be appointed in country areas only where the work cannot be distributed among the members of the local profession.
2. That the remuneration of part-time clinical assistants of clinics should not be less than £1 1s. per session (not exceeding 2½ hours).
3. That the remuneration of part-time senior medical officers of clinics be: In London (for one or two sessions per week not exceeding 2½ hours), £3 3s. per session, (for three or more sessions per week) £2 12s. 6d. per session; in the provinces £2 2s. and £1 11s. 6d. respectively per session.
4. That commencing salaries of whole-time senior medical officers of clinics be not less than £750 per annum, exclusive of travelling expenses.
5. That a whole-time assistant to a part-time senior medical officer be paid not less than £350 per annum, if non-resident, exclusive of expenses.

Conference at Bangor.

A conference of medical men of the North Carnarvonshire and Anglesey areas took place last week at Bangor to consider local schemes for the diagnosis and treatment of venereal diseases. Dr. Marion E. Mackenzie occupied the chair and an address was given by Major G. M. Dobson, R.A.M.C. A resolution in favour of compulsory notification, proposed by Dr. James Craig, was withdrawn, and support promised to the Local Government Board scheme.

THE SERVICES.

THE INDIAN MEDICAL SERVICE.

NOMINATIONS FOR APPOINTMENTS.

It has been announced in the press that after the open competitive examination held in July, 1915, for admission to the Indian Medical Service no similar examination would be held during the continuance of the war, but that such appointments as might be required to meet the absolutely indispensable needs of the service would be made by nomination by the Secretary of State. To assist him in making these appointments which, as already announced, will be limited in number to the absolutely indispensable needs of the service, Mr. Chamberlain has appointed a selection committee who will summon and interview such applicants as may appear to be *prima facie* suitable, and make recommendations for appointment. Applications for appointment should be addressed to the Secretary of the Military Department, India Office, Whitehall, S.W., and should contain concise particulars of the applicant's medical degrees and career. Applicants must be over 21 and under 32 years of age at the time of application. Particulars regarding pay, promotion, &c., in the service can be obtained from the Secretary, Military Department.

ROYAL NAVAL MEDICAL SERVICE.

The following appointments have been notified:—Staff-Surgeon: W. N. L. Cherry to *Victory*, additional, for disposal. Surgeons: A. Simpson to *Victory*, additional, for disposal; G. E. D. Ellis to *Wildfire*, for Sheerness Barracks

³ THE LANCET, Jan. 1st (p. 20) and 29th (p. 242), 1916.

¹ THE LANCET, Nov. 4th, 1916, p. 801.

and Yard; and W. E. Lloyd to *Diamond*. Temporary Surgeons: W. B. Gabriel to *Pembroke*, additional, for Chatham Hospital; and W. H. Coldwell and F. M. Allchin to *Victory*, additional, for Haslar Hospital.

Surgeons to be Staff-Surgeons: T. R. L. Jones, J. H. Burdett, A. V. J. Richardson, and G. R. McCowen.

To be temporary Surgeons: W. H. Blackburn, W. J. Colborne, and J. F. Haynes.

ARMY MEDICAL SERVICE.

Lieutenant-Colonel W. Pasteur, R.A.M.C. (T.F.), to be temporary Colonel and Lieutenant-Colonel M. MacG. Rattray to be temporary Colonel whilst Assistant Director of Medical Services of a Division.

ROYAL ARMY MEDICAL CORPS.

C. J. S. Stewart, C.A.M.C., from Honorary Major, to be temporary Captain.

Temporary Captain J. A. Turner, C.I.E., relinquishes his commission.

Temporary Lieutenants to be temporary Captains: T. D. Miller, T. H. Harker, W. H. Whitehouse, R. Brookes, C. A. Verge, and J. C. Bawden.

To be temporary Captains: J. R. Irwin, C.A.M.C. (late Lieutenant, R.A.M.C.), and J. D. Bruce, C.A.M.C.

Captain L. J. Violette, C.A.M.C., relinquishes his temporary commission on account of ill-health.

Temporary Lieutenants relinquishing their commissions: J. J. M. Dowzer, J. F. Adamson, A. Ross, P. N. Allman, and A. W. Wakefield.

To be temporary Lieutenants: H. Bowring, A. P. Piggot, T. G. Fenton, C. Duncan, F. J. Lennan, S. W. H. Stuart, R. A. Smith, R. Calleya, T. Clapperton, J. Geoghegan, J. Rickards, J. S. Strachan, Temp. Hon. Lieut. G. C. Hartley, C. T. MacL. Plowright, W. McAlpine, A. J. Macvie, D. N. Anton, G. W. Bury, Temp. Hon. Lieut. W. A. Hotson, H. J. Simson, J. L. Scott, R. J. McPeeters, T. Waterhouse, D. F. Riddell, M. F. Tylor, M. H. Laslett, C. Hackney, W. J. Smyth, W. H. Canter, C. R. Brown, H. Goodale, C. C. Fissette, J. R. Anderson, F. B. Macdonald, P. A. Storey, R. J. Gordon, H. Heathcote, S. H. Ryan, R. W. Nairn, S. A. Owen, T. B. Sellors, W. S. Wildman, F. J. Spilsbury, J. M. Christie, J. S. Young, D. C. P. Taylor, T. E. Flitcroft, J. F. H. Stallman, C. J. N. Longridge, and A. I. Simey.

E. G. Grove to be Temporary Lieutenant whilst employed at the Lord Derby War Hospital.

R. H. Campbell to be temporary Honorary Captain whilst employed at the British Red Cross Hospital, Netley.

Temporary Honorary Lieutenant R. Marshall to be temporary Honorary Captain.

TERRITORIAL FORCE.

Highland Field Ambulance; Lieutenant B. L. Davis to be Captain.

East Lancashire Field Ambulance: Lieutenant E. Hulme to be Captain.

London General Hospital: Lieutenant-Colonel W. Pasteur is restored to the establishment and seconded whilst holding a commission as temporary Colonel, Army Medical Service.

London Field Ambulance: Lieutenant O. Gleeson to be Captain.

London Sanitary Company: Lieutenant J. Inglis to be Captain.

Home Counties Field Ambulance: Captain (temporary Major) T. H. Chittenden, from Attached to Units other than Medical Units, to be Captain.

West Riding Field Ambulance: Captain H. H. Emmerson resigns his commission.

Northern General Hospital: Captain W. E. F. Tinley, from Attached to Units other than Medical Units, to be Captain, whose services will be available on mobilisation. Captain W. E. F. Tinley to be Major on the permanent personnel.

Attached to Units other than Medical Units.—Captain F. Philip to be temporary Major whilst acting as Registrar of a General Hospital.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The first article in the current issue of this journal is contributed jointly by Mr. Albert Morison, honorary surgeon to the Red Cross Hospital, Sunderland, and Lieutenant William J. Tulloch, lecturer in bacteriology at the University of St. Andrews, and deals with the treatment of wounds in war by magnesium sulphate. The article, which is illustrated with coloured plates, while emphasising the utility of MgSO₄ as a curative dressing, does not suggest its use as a first dressing for fresh wounds. Dr. I. Walker Hall and Dr. B. A. I. Peters, with the assistance of Mr. F. Nicholls, discuss in a joint paper the changes in the agglutinability, fermentation reactions, and absorptive capacities of the meningococcus during the active attack; Captain T. S. Allen relates some interesting experiences of X ray work in France; and Lieutenant-Colonel Netherville Barron, M.V.O., has a thought-compelling note in regard to physical training with especial reference to the training of convalescents. The subject is an important one both in its bearing on the rapid

return to the firing line of men who have been wounded, and on the cure of the convalescent soldier after the war. Captain H. L. Tidy and Lieutenant I. P. S. Dunn discuss the differential bactericidal values of malachite and brilliant green for the typhoid-coli group, and Captain T. H. Whittington publishes a report on the use of stock vaccine in infection by the bacillus typhosus, with an analysis of 230 cases.¹

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census 7462 births and 4182 deaths were registered during the week ended Saturday, Nov. 4th. The annual rate of mortality in these towns, which had been 12.2, 11.8, and 12.9 per 1000 in the three preceding weeks, fell in the week under notice to 12.6 per 1000 of their aggregate civil population estimated at 17,312,295 persons for the year 1915. During the first five weeks of the current quarter the mean annual death-rate in these towns averaged 12.4, against 12.1 per 1000 in London. Among the several towns the death-rate last week ranged from 3.2 in Ilford, 5.5 in Wimbledon, 6.6 in Lincoln and in Swansea, 6.8 in Enfield, and 7.0 in Ipswich, to 17.1 in Nottingham, 17.3 in Darlington, 18.1 in Bury, 19.1 in Bradford, and 19.3 in Norwich.

The 4182 deaths from all causes were 86 below the number in the previous week, and included 229 which were referred to the principal epidemic diseases, against 306 and 316 in the two preceding weeks. Of these 229 deaths, 131 resulted from infantile diarrhoeal diseases, 39 from diphtheria, 22 from measles, 20 from whooping-cough, 12 from scarlet fever, and 5 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 0.7, against 1.0 per 1000 in the previous week. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had declined from 477 to 221 in the seven preceding weeks, further fell to 131, and included 31 in London, 13 in Liverpool, 11 in Manchester, 10 in Birmingham, and 9 in Leeds. The deaths referred to diphtheria, which had been 45, 40, and 53 in the three preceding weeks, declined to 39, of which 12 occurred in London, and 3 each in St. Helens and Manchester. The fatal cases of measles, which had decreased from 25 to 13 in the four preceding weeks, rose to 22; 5 deaths were registered in London and 2 each in West Ham, East Ham, Birmingham, and Sheffield. The deaths attributed to whooping-cough, which had been 23, 10, and 13 in the three preceding weeks, rose to 20, and included 4 in Birmingham, 3 in Liverpool, and 2 each in St. Helens and Cardiff. The deaths referred to scarlet fever, which had declined from 13 to 5 in the four preceding weeks, rose to 12, of which 3 occurred in Liverpool. The fatal cases of enteric fever, which had been 11 in each of the two preceding weeks, fell to 5, and included 2 in Burnley.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 1074, 1067, and 1130 at the end of the three preceding weeks, further rose to 1141 on Saturday last; 146 new cases were admitted during the week, against 167, 125, and 197 in the three preceding weeks. The cases of diphtheria, which had increased from 1262 to 1490 in the seven preceding weeks, further rose to 1528; 186 new cases were admitted during the week, against 194, 188, and 231 in the three preceding weeks. These hospitals also contained on Saturday last 62 cases of measles, 47 of enteric fever, and 39 of whooping-cough, but not one of small-pox. The 1054 deaths from all causes in London were 1 in excess of the number in the previous week, and corresponded to an annual rate of 12.8 per 1000. The deaths referred to diseases of the respiratory system, which had been 132, 132, and 142 in the three preceding weeks, further rose to 164 in the week under notice.

Of the 4182 deaths from all causes in the 96 towns, 182 resulted from violence, 382 were the subject of coroners' inquests, and 1283 occurred in public institutions. The causes of 41, or 1.0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Leeds, Bristol, West Ham, Newcastle-on-Tyne, Hull, and in 71 other smaller towns. Of the 41 uncertified causes, 7 were registered in Birmingham, 6 in Liverpool, 3 each in London, Bootle, and Gateshead, and 2 each in Manchester, Preston, Middlesbrough, and Darlington.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year 1000 births and 635 deaths were registered during the week ended Saturday, Nov. 4th. The annual rate of mortality in

¹ See THE LANCET, vol. i., 1916, pp. 753 et seq.

these towns, which had been declined from 15.1 to 12.9 per 1000 in the four preceding weeks, rose to 13.9 per 1000 in the week under notice. During the first five weeks of the current quarter the mean annual death-rate in these towns averaged 13.7, against a corresponding rate of 12.4 per 1000 in the large English towns. Among the several towns the death-rate last week ranged from 7.2 in Perth, 7.4 in Motherwell, and 8.9 in Kirkcaldy, to 17.1 in Ayr, 17.3 in Aberdeen, and 18.4 in Leith.

The 633 deaths from all causes were 46 above the number in the previous week, and included 51 which were referred to the principal epidemic diseases, against 53 in each of the two preceding weeks. Of these 51 deaths, 18 resulted from infantile diarrhoeal diseases, 11 from measles, 10 from diphtheria, and 4 each from enteric fever, scarlet fever, and whooping-cough, but not one from small-pox. The death-rate from these diseases was equal to 1.1, against 0.7 per 1000 in the large English towns. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had declined from 66 to 19 in the four preceding weeks, numbered 18, and included 6 in Glasgow, and 2 each in Edinburgh, Dundee, Leith, and Coatbridge. The deaths referred to measles, which had been 16, 2, and 18 in the three preceding weeks, fell to 11, and comprised 8 in Dundee, 2 in Glasgow, and 1 in Edinburgh. The fatal cases of diphtheria, which had been 4, 12, and 4 in the three preceding weeks, rose to 10, and included 3 each in Glasgow and Aberdeen. Of the 4 deaths from enteric fever, 2 occurred in Glasgow and 2 in Kilmarnock. The deaths attributed to scarlet fever, which had been 7, 3, and 5 in the three preceding weeks, were 4 last week, but showed no excess in any particular town. The 4 fatal cases of whooping-cough were slightly in excess of the average in the earlier weeks of the quarter.

The deaths referred to diseases of the respiratory system, which had been 90, 74, and 87 in the three preceding weeks, rose to 95 in the week under notice, but were 55 below the number registered in the corresponding week of last year. The deaths from violence numbered 25, against 26 and 30 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the registration area of Dublin 187 births and 121 deaths were registered during the week ended Saturday, Nov. 4th. The annual rate of mortality, which had been 17.7, 17.5, and 18.7 per 1000 in the three preceding weeks, fell to 15.9 in the week under notice, against 12.8 and 13.3 per 1000 in London and Glasgow respectively.

The 121 deaths from all causes included 30 of infants under 1 year and 26 of persons aged 65 years and upwards. Five deaths (of infants under 2 years) were referred to diarrhoeal diseases and 3 to enteric fever. The causes of 12 deaths were uncertified, and those of 2 others were the subject of coroners' inquests, while 33, or 27 per cent., of the total deaths occurred in public institutions.

During the same period 135 births and 119 deaths were registered in the city of Belfast. The deaths corresponded to an annual rate of 15.9, against 15.8 per 1000 in the previous week, and included 21 of infants under 1 year and 32 of persons aged 65 years and upwards. Four deaths (of infants under 2 years) were referred to diarrhoeal diseases and 1 to whooping-cough. The causes of 3 deaths were uncertified, and those of 3 others were the subject of coroners' inquests, while 31 of the total deaths occurred in public institutions.

CLERICAL, MEDICAL AND GENERAL LIFE ASSURANCE SOCIETY.—At the 92nd annual meeting of this society, held at the offices in St. James's-square, S.W., on Nov. 3rd, a satisfactory report was submitted. The report showed that after providing over half a million sterling for depreciation and war claims, a 2½ per cent. valuation had been maintained, and £197,602 additional reserves had been laid by. The bonus available for distribution was equal to that of 1911, the largest in the history of the society. The net new business, though checked by the war, had increased from £672,732 to £737,472.

MANCHESTER BABIES' HOSPITAL.—A pamphlet of 44 pages contains the monthly reports from August, 1915, to July, 1916, of the Manchester Babies' Hospital at Slade-lane, Levenshulme, signed by the medical registrar, Dr. Gertrude H. Hickling. Ninety-four babies (50 male, 44 female) were admitted during the year; on account of acute gastro-enteritis (9), chronic dyspepsia and mal-nutrition (83). Two were found normal after admission. During the year 60 were discharged improved, 2 were transferred, 2 were taken home by their parents, and 4 were discharged unimproved on account of whooping-cough. Thirteen babies died; of the deaths 5 were from generalised tuberculosis. The age varied from less than one month to 12 months; the large majority being between two and six months. The average duration of stay in the hospital was 76 days. The cases admitted were not selected, but were taken in whenever there was a vacancy at the request of infant welfare centres, the medical officer of health, or private doctors.

Correspondence.

"Audi alteram partem."

THE EDITH CAVELL HOMES OF REST FOR NURSES.

To the Editor of THE LANCET.

SIR,—An appeal to the public is now being made on behalf of these homes. They are urgently needed, so that the noble women who work in our hospitals in these days of stress may, when overwrought, obtain a much-needed rest. Those of us who have to deal with hospitals are only too painfully aware how pressing this need is becoming. Some officers who have benefited by the unselfish ministrations of these devoted women have from time to time expressed to me their desire that a channel might be provided through which either officers or those in the ranks could give practical expression to their gratitude according to ability, and I venture to think that the project to establish homes of rest for nurses in memory of Edith Cavell offers to them an ideal opportunity for fulfilling their wish.

May I hope, therefore, that the appeal now being made may meet with the ready and generous response from our military forces which it deserves, and that subscriptions will flow in to the honorary secretary of the Edith Cavell Homes of Rest for Nurses, 25, Victoria-street, Westminster, S.W.

I am, Sir, yours faithfully,

DOROTHY HAIG.

St. James's Court, Buckingham Gate, S.W., Nov. 4th, 1916.

MASSAGE AND MEDICAL ELECTRICITY IN THE AFTER-TREATMENT OF CONVALESCENT SOLDIERS.

To the Editor of THE LANCET.

SIR,—Dr. Florence Lambert's report in your issue of Nov. 4th demonstrates how necessary was the paragraph to which she takes exception. The military convalescent hospitals have nothing to do with the question, since they are designed for such sick and wounded as "are likely to become quite fit to return to an Expeditionary Force within a maximum period of six weeks." So her remarks on these are beside the point.

Regarding the Command Dépôts, it is clearly of national importance that they should be equipped with every appliance which can reasonably be expected to lessen disability to the utmost extent in the briefest possible time. As a matter of fact, we know they are in certain instances far better equipped than, in order to push her own special views, she describes them. In one, at all events, Heaton Park, which was organised by a very able Canadian, Major Tait McKenzie, an admirable system of treatment, much on the lines of the Grand Palais in Paris, has been initiated, and is giving the good results which might be expected. In another, Ripon, I understand that similar methods, still further improved by the addition of diathermy, are being brought into use. But, unhappily, on the other hand, I hear of a third whose equipment and staff of masseuses is wholly inadequate.

Some of Dr. Lambert's inaccuracies need immediate correction. It is not correct to imply that the Grand Palais patients are not continuously treated or kept under proper discipline; she evidently has not read Dr. Camus's last report, issued in February. It is a pure assumption that the results of French massage are worse than those of English. It is untrue that the Zander treatment is used in Paris only because a trained body of gymnasts is not available; the Zander treatment (not, by the way, "unpopular," but nearly unknown, in England) is used for its obvious merits, which Dr. Lambert has, perhaps, not heard of, and skilled gymnasts are afterwards employed for the muscular re-education on which the French lay such stress and which Dr. Lambert seems to have misunderstood. It is sheer nonsense to say the *eau courante* bath is still on its trial, and will be so for two years, when its value has been thoroughly tested in France, and is being now recognised in this country by those who have observed its action. To compare it with massage exposes a degree of want of knowledge truly extraordinary, since its value is

that of a most successful adjuvant to massage. Some of us have been wondering what sort of "expert" advice our overworked War Office has been getting on these serious questions. Here is apparently one of the "experts," and our wonder lessens.

Happily better counsels are beginning to reach the official ear. In July, 1915, four months before the first general announcement of Command Depôts was made (although soon after a further official notice was issued stating that no special treatment was yet available), one of the secretaries went over to Paris to investigate, on behalf of the special committee of the Balneological Section of the Royal Society of Medicine (itself in close touch with the War Office), the remarkable results being obtained at the Grand Palais, and brought back a report which was communicated to the military authorities. In the following February the President of the section went to Paris, and, being afforded special facilities by the French authorities, was able to bring back a very full confidential report on the financial and scientific particulars necessary for the installation in this country on an adequate scale of the French system in order to compare its merits with those of our own procedures. This report was communicated to the War Office at once. Soon afterwards a small installation for officers was privately set up in London, which has been giving excellent results.

There can be no reasonable doubt that there are large numbers of disabled men, up and down the country, for whom an adequate system of physical treatment is not available, and whose disabilities are being allowed to persist in greater degree than would otherwise be the case. The question is now one for the Treasury, the Insurance Commissioners, and, above all, for the public. Are we, or are we not, to be allowed to give a fair trial to a method of treatment which has at least incontestably proved its claim to such a trial? As a student, more than a quarter of a century ago, I remember the lives which were lost by the reactionaries who did not believe in "microbes." Are we to have the lives of our splendid men rendered unnecessarily wretched by needless crippling to please a new generation of reactionaries? I commend Dr. Lambert's report to all who are in doubt.—I am, Sir, yours faithfully,

Exeter, Nov. 6th, 1916.

W. GORDON.

To the Editor of THE LANCET.

SIR,—In an interesting account of the mechano- and electro-therapeutical departments at the Command Depôts and Convalescent Camps given by Dr. Florence Barrie Lambert in your issue of Nov. 4th, she has made one or two statements and implications which we think it our duty to correct.

Dr. Lambert states with reference to a paragraph quoted from a report of a subcommittee of the Committee of Council of the Section of Balneology and Climatology of the Royal Society of Medicine, that "it passes over as practically non-existent the splendid work of the Command Depôts and Convalescent Camps, chiefly because the *eau courante* bath has not been installed broadcast." This is far from accurate. The object of the Committee of Council since its formation in January, 1915, has been to further, by all means in its power, the employment and coördination of all forms of physical treatment for disabled soldiers, whether by means of hydrology, mechano- or electro-therapy, massage, or gymnastics. The committee has never urged the use of one form of treatment to the exclusion of another. The *eau courante* bath was recommended because it had been found a most useful adjunct to massage and mechanical movements, the beneficial effect of which has been shown to be greatly increased by the previous application of the *eau courante* bath. We should also like to point out that neither at Heaton Park Command Depot, nor at the National Orthopaedic Hospital in London, nor at the Red Cross Clinic for Physical Treatment for Officers in London is the Zander apparatus used only for giving *passive* mechanical exercises. The apparatus employed at these institutions and at the Grand Palais Hospital in Paris is used principally for active movements. The "good manual work" which Dr. Lambert so appreciates is very important, but, even when combined with electricity, it cannot replace all other forms of physical treatment.

When the committee was formed there is no doubt that this country had lagged behind both France and Germany with regard to physical treatment, but now, after the lapse

of nearly two years, a great deal of satisfactory work is being done at Convalescent Camps, Command Depôts, and Red Cross institutions in this country. We must not, however, permit ourselves to become self-complacent, but continue to develop, improve, and coördinate all methods of physical treatment, old and new, so that no disabled soldier shall be able to say that he has not had every form of treatment likely to reduce his disability to a minimum on his return to civil life.

We are, Sir, yours faithfully,

London, W., Nov. 6th, 1916.

SEPTIMUS SUNDERLAND,
J. CAMPBELL MCCLURE.

MANUFACTURE OF SALVARSAN PRODUCTS IN ENGLAND AND FRANCE.

To the Editor of THE LANCET.

SIR,—In reply to Captain W. d'Este Emery's and Captain J. Everidge's communication on this subject in your issue of Nov. 4th, I beg to state that since my letters to THE LANCET of April 3rd, May 1st, and May 8th, 1915, I have not drawn renewed attention to my unfortunate experiences with kharsivan for the excellent reason that I decided more than a year and a half ago to abandon its use for ever.

I did in THE LANCET of Sept. 30th last draw attention to the fact that in the space of a few weeks two inquests were reported in the daily papers of fatalities following injections of kharsivan at Guy's Hospital. This can hardly be called my unfortunate experience, but the cases were cited as a justification of the conclusions which I had arrived at, never in the future to employ this preparation.

I am, Sir, yours faithfully,

Queen Anne-street, W., Nov. 6th, 1916.

J. ERNEST LANE,
Major, R.A.M.C. (T.).

To the Editor of THE LANCET.

SIR,—We have read with interest the letter from Captain d'Este Emery and Captain John Everidge, which you publish in your issue of Nov. 4th, and we are pleased to be able to state that our experience of kharsivan is in exact agreement with theirs. In therapeutic effect we regard the British product as identical with the German, and its use has never produced in our hands anything but the most beneficial results.

We are interested to notice that the technique of your correspondents is identical with that which we have followed for several years, and we are confident that were this technique followed carefully by all administrators of salvarsan or kharsivan ill-effects would entirely disappear.

Major Ernest Lane seems to have had some unfortunate experiences. It would be interesting to know if he personally supervises the preparation of all the solutions he uses in administering kharsivan.

We are, Sir, yours faithfully,

Liverpool, Nov. 6th, 1916.

G. STOPFORD-TAYLOR.
R. W. MAUKENNA.

THE ETHICAL STANDARDS OF PANEL PRACTICE.

To the Editor of THE LANCET.

SIR,—Dr. O. Eccles's letter in your issue of Nov. 4th provides food for reflection, for evidently Dr. Mitchell Bruce "knows something" if he said what is attributed to him. The point at the bottom is: the strain on ethical standards which is put on the conscientious panel doctor by the method at present in vogue. A big panel list is a commercial asset, by whatever means obtained, and it is not necessarily the best qualified doctor who gets the biggest panel. There are wheels within wheels, so to speak, and the public are no better judges of doctors than doctors are supposed to be of financial and general business undertakings. Anyway, a big panel list can only be properly supervised by neglecting private work. Since one is not likely to do this, the panel patient puts a great strain on one's ethical standard. He must be disposed of as quickly as possible, but *without offence*, and that for three reasons: 1. He may complain to his Insurance Committee and cause worry. 2. He may cease to recommend his present panel doctor. 3. He may have a family, who are private patients. And so if he alleges he is not fit for work and wants another

certificate, there is a great strain thrown on his panel doctor, and who shall blame him if the temptation is greater than he can bear? Some folk like temptation and court it, and boast how they have resisted it, but there generally comes a time when the resistance gives way. It is a question of human nature and human frailty—and I cannot see where Dr. Mitchell Bruce is wrong in calling attention to the fact, as Dr. Eccles puts it, that with regard to panel doctors "they are tempted by the conditions of panel practice." Contrast the position of the regimental M.O. in taking "sick parade" in the morning, where he sorts out the malingerers from the really sick, oftentimes a difficult task, but he is at a great advantage, being unhampered by temptation as to financial losses or future popularity.

This panel system has caused the medical profession to almost cease to be an "honourable profession," let alone a "noble profession," in the eyes of the public, and the sooner we recognise the fact that it should be carried on by whole-time men, paid by salary, and no temptations to trouble them, the better for everybody—insured, uninsured, and medical men. I write as an old Tory and as the result of experience of panel practice since the commencement of the National Insurance Act: thus only will ethical standards remain what they were in Dr. Mitchell Bruce's early days.

I am, Sir, yours faithfully,

Saffron Walden, Nov. 4th, 1916. JOHN P. ATKINSON, JUN.

THE DIFFERENTIATION OF HEART MURMURS IN SOLDIERS.

To the Editor of THE LANCET.

SIR,—I have read with great interest the letter by Professor David Drummond on the above subject which appeared in your issue of Nov. 4th. I venture to give my experience with regard to the effect of external pressure on functional murmurs, as I am led to believe that many medical men are not aware that steady pressure over the site of a functional murmur at or near the apex will obliterate that murmur, but will not do so in the case of an organic murmur. I have seen quite a number of cases of officers on sick-leave, or invalided out of the service, who have come to me with a history of organic valvular disease, but on examination the murmur has proved to be functional by the pressure test, and has later disappeared on treatment. I do not find it necessary to press in the ribs with the fingers as in Professor Drummond's method, because simple pressure with the bell-piece of the stethoscope has proved sufficient in all cases I have seen. I am particularly interested in Professor Drummond's letter, as I had the pleasure of attending his clinical lectures when I was a student.

I am, Sir, yours faithfully,

Harley-street, Nov. 3rd, 1916. LESLIE THORNE THORNE.

THE TREATMENT OF VENEREAL DISEASES.

To the Editor of THE LANCET.

SIR,—In the annotation entitled "Practical Instruction in the Diagnosis and Treatment of Venereal Diseases," in THE LANCET of Oct. 28th I notice the statement that neo-salvarsan is the only colloid arsenical preparation which can at present be wisely administered intramuscularly. Your contributor evidently overlooked galyl (Bresillon), which is now so largely used intravenously in place of salvarsan. This preparation is also extensively used intramuscularly, especially in France, and with the very best results. It is a very perfect oily emulsion, which, with a little care in technique, can be used with little or no pain. The results are excellent, both immediate, in the clearing up of evident lesions, and ultimate, as proved by the Wassermann test. Personally I have used this preparation in over 400 injections with the best results and without the slightest mishap or inconvenience to the patient.

I am, Sir, yours faithfully,

Leicester-square, W.C., Nov. 2nd, 1916. GERALD DALTON.

CARDIFF MATERNITY HOSPITAL.—Commander Sir Edward Nicholl, who has already subscribed £10,000 to the King Edward VII. Hospital, Cardiff, has given £50,000 towards the Nursing Home and Maternity Hospital. This department of the King Edward VII. Hospital will cost £120,000, of which £80,000 have been subscribed or promised.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Capt. B. J. L. Fayle, R.A.M.C., attached Royal Horse Artillery, was educated at Clifton College and at Cambridge, and qualified in 1913. He held house appointments at the Bristol General Hospital, and joined the R.A.M.C. just prior to the war, obtaining his captaincy in March, 1915.

Capt. T. C. Kidner, R.A.M.C., attached Middlesex Regiment, was a student at the Royal Dental Hospital, London, and at the Middlesex Hospital, qualifying in dentistry in 1912 and in medicine and surgery in 1914. He was in practice at Stoke Holy Cross, Norwich, before the war, and joined the R.A.M.C. in September, 1914, obtaining his captaincy in March, 1915.

Capt. F. N. S. Hitchcock, New Zealand Medical Corps, was a student at St. Thomas's Hospital, London, and qualified in 1907.

Died of Wounds.

Capt. M. J. Rees, R.A.M.C., was educated at the City of London School and at the University of Wales, Aberystwith, and was a student at Guy's Hospital, London, qualifying in 1902. After holding health appointments at Reading and at Aberdare he went to the Local Government Board at Whitehall, and was a medical inspector when he volunteered for the R.A.M.C. He obtained his captaincy in January this year.

Died.

Lieut. F. Whitaker, R.A.M.C., was educated at Cambridge University and at St. Bartholomew's Hospital, London, and qualified in 1903. He had held appointments at the Royal Infirmary, Halifax, and was in practice at Halifax when he joined the R.A.M.C. in October, 1915.

Wounded.

Capt. R. Burgess, R.A.M.C.

Capt. G. L. Jones, R.A.M.C., attached Devon Regiment.

Capt. J. M. Mackenzie, M.C., R.A.M.C., attached Northumberland Fusiliers.

Lieut. G. McI. Dale, R.A.M.C., attached Rifle Brigade.

Capt. H. B. Low, R.A.M.C.

Capt. A. E. Quine, R.A.M.C., attached Middlesex Regiment.

Lieut. R. Younger, R.A.M.C., attached Royal Warwick Regiment.

Capt. N. M. McNeill, Canadian Army Medical Corps, attached Canadian Infantry.

THE HONOURS LIST.

For distinguished service and devotion to duty during the typhus epidemic at Gardelegen Prisoners of War Camp, Germany, during the spring and summer of 1915, when 12 of the 16 medical men of the Allied Forces contracted the disease and two died, the following honours have been conferred:—

C.M.G.—Major P. C. T. Davy, R.A.M.C.

D.S.O.—Capt. A. S. Williams, R.A.M.C., and Capt. A. J. Brown, R.A.M.C., Special Reserve.

MENTIONED IN DESPATCHES.

The names of the following medical officers are to be added to the despatches detailed:—

From General Sir Ian Hamilton, dated Dec. 11th, 1915 (THE LANCET, Feb. 5th, 1916, p. 321): Capt. F. C. Casement, R.A.M.C., Temp. Surg. E. S. Calthorp, R.N., Staff-Surg. A. T. Rivers, R.N., Staff-Surg. C. E. C. Stanford, R.N.

From General Sir Charles Monro, dated March 6th, 1916 (THE LANCET, July 22nd, 1916, p. 163): Capt. A. J. Horne, R.A.M.C., Temp. Hon. Capt. W. T. Thomas, R.A.M.C., Temp. Lieut. H. E. Brown, R.A.M.C. (since relinquished his commission).

From Sir Reginald Wingate, dated August 8th, 1916 (THE LANCET, Nov. 4th, 1916, p. 806): Capt. E. Gibbon R.A.M.C.

Lieutenant-Colonel Gilbert Barling, R.A.M.C. (T.F.), has been appointed a consulting surgeon to the British forces in France.

OBITUARY OF THE WAR.

BLENNMAN BUHÓT GRAYFOOT, M.D. DURH.,
M.R.C.S. ENG., L.R.C.P. EDIN., C.B.,
COLONEL, INDIAN MEDICAL SERVICE.

Colonel B. B. Grayfoot, whose death from illness contracted on active service was reported on Sept. 30th, was son of the Rev. Chrichlow Grayfoot, sometime Chaplain to the Forces in Barbados, and was born in 1860. At the age of 20 he came to this country with a Gilchrist scholarship, and studied medicine at Edinburgh and University College, London, obtaining in due course the conjoint and triple diplomas, and later the M.D. of Durham University. Passing out of Netley into the Indian Medical Service in 1886, he



was for some years in charge of the New Civil Hospital at Karachi, and spent his whole time in the Bombay Presidency, where he was medical storekeeper to the Government until his appointment as A.D.M.S. of the Lahore Division in 1912. On the outbreak of war he went with this division to France, where he was mentioned in despatches and appointed C.B. for his services. In December, 1915, he was transferred to Mesopotamia, where he later became D.D.M.S. For

a period he acted as D.M.S. to the whole of the Tigris Forces. His tireless energy and apparent ability to withstand the rigours of the climate gave place to an attack of jaundice of a malignant variety, from which he died at Alexandria on his way home to England.

Colonel Grayfoot was a man of strong character and genial disposition, trusted by his superiors and looked up to by those of whom he had charge, both natives and Eurasians. It is stated that no one could be awkward or shy in his presence, and many stories are current of his outspokenness on occasions which demanded it. On the occasion of an official visit to a local hospital which was short of necessary funds, the Governor remarked that a certain door wanted new paint to bring it into keeping with the appearance of the rest of the building. Colonel Grayfoot replied: "We had the hospital whitewashed for this visit. Your Excellency, and should have had the door painted if we could, but there wasn't enough money for that!" Colonel Grayfoot will be greatly missed both in India and at home. The portrait which we are able to give of him is from a pencil sketch of the whole of his officers' mess by the French artist Sarut.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

- Second Lieut. J. R. Greathead, Rifle Brigade, sixth son of the late Dr. J. B. Greathead, of Grahamstown, South Africa.
- Second Lieut. G. C. R. Atkinson, East Lancs Regiment, elder son of Dr. T. R. Atkinson, of Chadwell Heath, Essex.
- A. R. H. Chessall, London Regiment, second son of the late Dr. W. Chessall, of Horley, Surrey.
- Second Lieut. H. S. Blair, Duke of Cornwall's Light Infantry, elder son of Dr. C. S. Blair, of Richmond, Surrey.
- Second Lieut. W. H. Dyson, London Regiment, son of Dr. W. Dyson, of Sheffield.
- Second Lieut. A. S. Cleveland, Sherwood Foresters, elder son of Dr. R. A. Cleveland, of Nicosia, Cyprus.
- Corp. A. G. Leeson, Canadian Infantry, only son of the late Dr. A. E. Leeson, of Dorset-square, London.
- Lieut. F. S. Rankin, Canadian Engineers, attached Royal Flying Corps, eldest son of Dr. W. D. Rankin, of Woodstock, New Brunswick.
- Second Lieut. T. Maxwell, Royal Dublin Fusiliers, only son of Mr. P. W. Maxwell, F.R.C.S.I., of Lower Baggot-street, Dublin.
- Second Lieut. T. S. Woods, Royal Field Artillery, eldest son of Sir R. H. Woods, Past President of the Royal College of Surgeons in Ireland, of Merriion-square, Dublin.

CENTRAL MEDICAL WAR COMMITTEE: THE FINANCIAL INTERESTS OF MEDICAL MEN ON SERVICE.

The Central Medical War Committee have drawn up the following procedure which they recommend to the attention of medical men in all localities. Under the procedure the financial interests of medical men on naval or military service would be to some extent protected; loss to them may be inevitable, but much will be saved if the suggestions of the Central Medical War Committee are faithfully followed:—

1. On a new patient presenting himself he should be asked the name of the doctor who last attended him. If his doctor is absent on service and has left a locum tenens an attempt should be made to induce the patient to go to the locum tenens.
2. If the last doctor who attended be on military service it should be explained to the patient that attendance will willingly be given on behalf of that practitioner and on no other terms.
3. Any attendances on behalf of such patients should be carefully and separately recorded and a list of such attendances sent at regular intervals to the representative of the absentee.
4. An attempt should be made to ascertain the fees charged by the absentee, and a charge not less than this should be made on his behalf.
5. Accounts rendered on behalf of the absentee (if sent in by the deputy) should mention the absentee's name, and moneys received should be divided according to the scheme adopted by the Local Medical War Committee.
6. The rule of dividing the fees should apply to all kinds of work. No exception, for example, should be made as regards operations, inquiries, consultations, and anaesthetics, unless some special arrangement has been arrived at as regards particular services by the Local Medical War Committee after consulting the local profession.
7. New patients introduced by the patient of an absentee should be regarded as belonging to the absentee's practice.
8. In cases in which the patient's frequent change of doctor leads to doubt as to who should be regarded as the regular attendant, the absentee should be given the benefit of the doubt.
9. No patient attended on behalf of an absentee should be attended by the deputy for at least one year after the absentee's return.
10. The greatest discretion should be used as to the introduction of a partner or assistant or in commencing a new practice in an area from which men are absent on service.
11. Great care should be taken in the buying and selling of practices. Newcomers to a district should be doubly scrupulous in regard to the practices of absentees, and should at once ascertain and join in any arrangements that have been made for the protection of absent practitioners.
12. The honour of the profession is specially involved where a vacancy occurs through the death of a practitioner on service. Definite arrangements have been made to meet such a contingency in some areas and should be made in all. Every assistance should be given in enabling the successor to the practice to have such a fair start as will entitle the dependents on the practice to expect a fair price for it. The local practitioners should carry out the same procedure with regard to the successor as they had undertaken with regard to the man who has fallen while on service—namely, refuse to attend the patients of the practice except on behalf of the successor, for a period of at least a year after the practice has been taken over.
13. In all cases of doubt as to what is the right course of action as regards an absentee the practitioner should consider what he would like his neighbours to do if he were absent on military service. The Local Medical War Committee or the Central Medical War Committee will always be glad to advise.

PHYSICAL EXAMINATION OF CANDIDATES FOR FLYING SERVICE.

We all admire the work of our aviators, and realise that they must be picked men—how carefully picked few of us have any knowledge. Consequently there is great interest in the account of the measures taken in selecting airmen for the United States Navy and the French Army, which are detailed in the *Military Surgeon* (Washington, D.C.) for October. To begin with, in each case men are required who are ordinarily sound and fit for general service. The United States Navy then requires that their eyesight and hearing shall be fully normal and lays special stress on the absence of middle-ear disease and on careful tests of the sense of equilibration or the power of maintaining balance. The French service makes very minute inquiry,¹ by the help of the D'Arsonval chronograph, into the psycho-physiological aptitudes of candidates, testing their reaction time to auditory and sensory stimuli (must not exceed 0.15 of a second) and to visual signals (must not exceed 0.2 of a second). Emotional tests are also applied, and a candidate is rejected if his respirations are disturbed for more than 1/25th of a second by the unexpected firing beside him of a pistol. So it is said "the heroes of the air are neither neuropathic nor drug users, but calm men of steady hearts, with nerves of steel, strong eyes, and sure hands." In the United States Naval Air Corps the particular after-effect of the use of alcohol, viz., delayed reaction time, causing a lessened ability to act quickly, is a known danger, and its bad effects are prevented by voluntary abstinence.

¹ THE LANCET, March 18th, 1916, p. 633.

HOSPITAL MAGAZINES.—There are many magazines issued for the amusement of the patients and staffs at our war hospitals, among the best being the *Craigleith Hospital Chronicle* and the *Gazette of the 3rd London General Hospital*, the November issues of which have now been published. Both contain pictures and letterpress, humorous and serious, of a creditable standard, and as the profits of the magazines are devoted to providing extra comforts for our wounded soldiers, the publications are deserving of support. The *Craigleith Chronicle* can be obtained at the 2nd Scottish Hospital, Craigleith, Edinburgh, price 6d., and the *Gazette* at the 3rd London General Hospital, Wandsworth, price 3d.

HANDICRAFTS FOR THE WOUNDED.—An appeal signed by Lady Emma Crichton and the Hon. Mrs. Eliot York has been issued on behalf of a fund for supplying materials for handicraft to the wounded in the Royal Victoria Hospital, Netley. For this purpose a sum of £600 is required, and a sale of soldiers' handicrafts will be held in connexion with the fund on Nov. 24th at 19, Grosvenor-square, when H.R.H. the Princess Christian will preside.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—As the result of the Final Examination held from Oct. 10th to 24th the following candidates were among those approved in the undermentioned subjects, but are not qualified to receive the diplomas:—

Medicine.—A. Arias, St. Bartholomew's; H. H. Bailey, L.M.S.S.A. Lond., London; D. J. Batterham, B.A. Cantab., Cambridge and St. Bartholomew's; Margaret Eliza Björkgren, Royal Free; L. G. Blackmore, Middlesex; C. J. L. Blair, St. Bartholomew's; H. J. Blampied, St. Thomas's; C. S. Bluemel, M.A., M.D. Colorado, Colorado University; Hilda Kathleen Brude, Manchester; H. R. Buttery, Cambridge and St. Bartholomew's; P. A. Buxton, B.A. Cantab., Cambridge and St. George's; O. St. L. Campion, Guy's; C. H. Carroll, London; A. A. Cockayne, B.A. Cantab., Cambridge and St. Thomas's; C. J. C. Cooke, University College; G. F. Cooke, St. Bartholomew's; R. N. Cooper, M.B., B.S. Bombay, Bombay University; W. Cramer, University College; H. A. De Morgan, L.M.S.S.A., Middlesex; J. D. Dimock, L.D.S. Eng., Middlesex; J. R. Dingley, University College; H. W. Eddison, B.A. Cantab., Cambridge and Guy's; E. E. Gibb, B.A. Cantab., Cambridge and St. Thomas's; A. Girgis, London; L. B. Goldschmidt, B.A. Cape, King's College; Iris Harding, Royal Free; T. L. Heath, Guy's; N. S. Hewitt, B.A. Cantab., Cambridge and London; L. G. Higgins, B.A. Cantab., Cambridge and St. Thomas's; C. Homi, M.B., B.S. Bombay, Bombay and Middlesex; H. Johnson, L.S.A. Lond., Guy's; E. A. C. Langton, St. Bartholomew's; Hilda Mary Lazarus, M.B., B.S. Madras, Madras University; H. W. Leatham, B.A. Cantab., Cambridge and St. Thomas's; J. B. S. Lewis, B.A. Cantab., Cambridge and St. George's; H. D. McIlroy, B.A. Cantab., Cambridge and London; K. A. I. Mackenzie, B.A. Oxon., Oxford and St. Bartholomew's; Marie Mathilde Alice Moralt, Royal Free; A. H. Morris, Bristol; J. B. Mudge, St. Bartholomew's; Elizabeth O'Flynn, St. George's; A. Orr-Ewing, B.A. Cantab., Cambridge and St. Bartholomew's; W. W. Newton, Birmingham; A. L. Packham, L.D.S. Eng., Middlesex; J. A. Pantun, Manchester; A. A. Prichard, M.A. Cantab., Cambridge and Glasgow; F. H. Smith, M.A. Cantab., L.D.S. Eng., St. George's; N. F. Smith, B.A. Oxon., St. Bartholomew's; R. H. Tasker, Bristol; H. Taylor, Liverpool; S. A. T. Ware, St. Thomas's; A. G. E. Wilcock, Cambridge and St. George's; K. M. O. Woodruff, Guy's; W. G. Woolrich, B.A. Cantab., Cambridge and St. Thomas's.

Surgery.—C. S. Bluemel, M.A., M.D. Colorado, Colorado University; J. Burke, Glasgow and London; A. A. Cockayne, B.A. Cantab., Cambridge and St. Thomas's; A. B. Cocker, L.D.S. Eng., Guy's; M. A. B. Demerdash, University College; H. A. De Morgan, L.M.S.S.A., Middlesex; Frances Jane Du Pré, Sheffield; T. L. Heath, Guy's; M. C. Joynt, Guy's; G. M. Kendall, B.A. Cantab., Cambridge and St. Thomas's; C. F. Kernot, London; E. R. Longstaff, St. Bartholomew's; H. D. McIlroy, B.A. Cantab., Cambridge and London; N. H. S. Maelzer, Guy's; C. J. Pennv, B.A. Cantab., Cambridge and Middlesex; W. M. A. Rahman, University College; M. Shimberg, London; and W. G. Verniquet, B.A. Cantab., Cambridge and St. Bartholomew's.

Midwifery.—J. K. Adhya, M.B. Calcutta, Calcutta and Middlesex; E. G. Anderson, London; E. B. Andrae, London; H. D. Apergis, Guy's; H. H. Bailey, L.M.S.S.A. Lond., London; E. J. Ball, Ph.D. Heidelberg, Bristol; N. A. H. Barlow, Guy's; H. W. Barnes, King's College; D. J. Batterham, B.A. Cantab., Cambridge and St. Bartholomew's; E. V. Beale, B.A. Cantab., Cambridge and London; D. C. Beaumont, Cambridge and London; W. T. Beswick, St. Thomas's; A. O. Bolton and J. E. A. Boucaud, St. Bartholomew's; E. D. Broster, B.A. Cantab., Cambridge and University College; W. B. Buer, Guy's; R. Calvo, St. Thomas's; O. St. L. Campion, Guy's; J. E. Carpenter, London; O. C. Carter, London; D. G. Churcher, St. Thomas's; E. A. Clegg, Middlesex; A. M. Clement, St. Thomas's; R. N. Cooper, M.B., B.S. Bombay, Bombay University; R. S. Corbett, St. Bartholomew's; G. R. Cowie, Middlesex; J. Crestin, St. Bartholomew's; D. R. Curnock, L.D.S. Eng., Charing Cross; G. V. Davies, St. Mary's; S. R. E. Davies, St. Bartholomew's;

P. G. S. Davis, St. Thomas's; L. P. de Abrew, Ceylon and London; H. B. Dodwell, B.A. Cantab., Cambridge and University College; C. T. J. N. Drobig, St. Thomas's; E. F. Fernando, St. Mary's; L. P. L. Firman-Edwards and R. French, St. Bartholomew's; P. E. F. Frossard, London; Satyapriya Ghosh, Royal Free; L. Gill, Guy's; Eryl Glynn, Royal Free; E. F. S. Gordon, St. Bartholomew's; Iris Harding and Joan Hardy, Royal Free; L. B. Hartley, B.A. Cantab., Cambridge and St. Thomas's; K. R. Hill, University College; J. C. C. Howe, Guy's; J. Kyle, Guy's; Hilda Mary Lazarus, B.A., M.B., B.S. Madras, Madras; F. R. Leblanc, Guy's; H. W. Lewis, Middlesex; E. E. Llewellyn, B.A. Cantab., Cambridge and St. Bartholomew's; R. W. Lush, B.A. Oxon., Oxford and Middlesex; A. G. F. McArthur, B.A. Cantab., Cambridge and St. Thomas's; B. Maclean, University College; T. H. McLeod, St. George's; R. T. Macrae, London; M. Mahfooz, St. Thomas's; J. S. Matthews, University College; P. N. Menon, University College; M. W. H. Miles, St. Thomas's; Marie Mathilde Alice Moralt and Noel Olivier, Royal Free; S. W. Page, B.A. Cantab., Cambridge and St. Bartholomew's; V. S. R. Pandit, St. Bartholomew's; D. F. Pantun, London; Eleanor Joyce Partridge, Royal Free; A. H. Pearce, B.A. Cantab., Cambridge and St. Thomas's; C. J. Penny, B.A. Cantab., Cambridge and Middlesex; W. I. F. Powell, London; A. A. Prichard, M.A. Cantab., Cambridge and Glasgow; H. N. Pritchett, Guy's; Marianne Olive Ramsay, B.Sc. Lond., Royal Free; H. E. Rhodes, B.A. Cantab., Cambridge and London; R. I. Rhys, St. Bartholomew's; D. W. R. Richardson, B.A. Cantab., Cambridge and London; J. P. Ross, St. Bartholomew's; G. H. Rosedale, B.A. Oxon., Oxford and St. Bartholomew's; H. Rowan, University College; A. R. Sami, St. Bartholomew's; C. E. A. Shepherd, St. George's; M. Shimberg, London; R. D. Shirwalker, University College; P. A. Smuts, St. Bartholomew's; E. D. Spackman, B.A. Cantab., Cambridge and St. Bartholomew's; M. B. R. Swann, B.A. Cantab., Cambridge and King's College; Ellen Syk, Royal Free; P. R. Tennekoon, London; D. J. Thomas and J. H. Thomas, University College; F. F. Tisdall, M.B. Toronto, Toronto University; W. G. Verniquet, B.A. Cantab., Cambridge and St. Bartholomew's; W. J. Walters, B.A. Cantab., Cambridge and Guy's; P. Ward, Sheffield; C. H. Warner, B.Sc. Lond., Middlesex; F. E. G. Watson, St. Bartholomew's; A. W. Wells, London; W. H. White, St. Thomas's; and S. Yablavit, London.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The next general meeting will be held on Tuesday, Nov. 21st, at 2.45 p.m., at 11, Chandos-street, Cavendish-square, W., Lieutenant-Colonel David G. Thomson presiding. Captain Colin McDowall will read a paper on Functional Gastric Disturbance in the Soldier.

ROYAL SOCIETY OF ARTS.—The sessional arrangements include an opening address (Nov. 15th at 4.30 p.m.) by Dugald Clerk, F.R.S., chairman of the council, on "The Stability of Great Britain"; a paper (Dec. 20th at 4 p.m.) by A. C. Benson, C.V.O., Master of Magdalene College, Cambridge, on "Classical and Scientific Education"; a series of three Howard lectures (Nov. 27th and Dec. 4th and 11th, at 5 p.m.) by John S. S. Brame, professor of chemistry at the Royal Naval College, Greenwich, on "Coal and its Economic Utilisation"; and a series of four Cantor lectures (Jan. 29th and Feb. 5th, 12th, and 19th, at 4.30 p.m.) by Professor A. B. Pite, F.R.I.B.A., on "Town Planning and Civic Architecture." Admission is by ticket.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 1ST.

Medical Men and the Silver War Badge.

Mr. WATT asked the Financial Secretary to the War Office whether the silver war badge for service was refused to medical men who had served for a year or over in the Royal Army Medical Corps if they had not relinquished their commissions on account of old age, or physical infirmity arising from wounds, or sickness caused by military service; whether he was aware that this regulation worked out unfairly to many medical men who had left the service only on the urgent call of duty to the civilian population who were bound to have some medical attention; and whether he would alter the regulation accordingly.—Mr. FORSTER answered: The silver badge was introduced specifically for distinguishing those who, having served with His Majesty's Forces since August 4th, 1914, have relinquished their commissions or appointments or have been discharged on account of age, wounds, or sickness. It is not a commemorative medal for service during the war. If a medal is granted for the present war, claims of those persons whom the honourable member mentions will be considered with all others who have served in the war.

Medical Appeal Boards.

Mr. ANDERSON asked the Financial Secretary to the War Office how many medical appeal boards had been set up and in what parts of the country; and whether he could state by what means a man who was convinced that he had not received fair treatment by the first medical board could get

in touch with the appeal board and so obtain re-examination.—Mr. FORSTER replied: One special medical board has been set up in London. Men who after being passed fit for service by a recruiting medical board are convinced that they have not received fair treatment can produce evidence to that effect before the tribunal. If the tribunal consider that the men have not been correctly classified by the recruiting medical board and the case goes to the special medical board in London, arrangements are made for the man's travelling and subsistence during the period he is away from home.

Mr. HOGGE: May I ask whether the chairmen of the various tribunals in Scotland have decided that provision could not be made on account of the expenses involved, and under those circumstances could not an appeal board be established in the capital of each country?—Mr. FORSTER: I hope that the answer I have given will remove that feeling.

Medical Arrangements for the Volunteers.

Mr. HOGGE asked the Financial Secretary to the War Office whether there were any medical arrangements for the County of London Volunteers; whether he was aware that accidents occurred during training on Sundays and that the provision of medical assistance was haphazard; whether he was aware that many doctors would be willing to give their services regularly if they were recognised on the old regimental system whereby they could be allocated to the volunteers in their own district; and whether he would devise a system which would utilise such men for a very desirable purpose.—Mr. FORSTER answered: A scheme for the formation of a medical service as part of the Volunteer organisation has been prepared, but certain details remain to be settled. It is hoped, however, that the necessary instructions will be issued very shortly. The considerations referred to in the question have been borne in mind in framing the scheme mentioned above.

Health of Australian Troops.

Mr. LYNCH asked the Financial Secretary to the War Office whether he could state the figures showing the number of deaths from pneumonia during last year among Australian soldiers at Perham Downs; and whether, in view of the difference between the climate of this country and that of Australia, extra precautions would be taken this year to ensure that the health of the Australian troops here should be maintained at as high a level as possible.—Mr. FORSTER said in reply: I have not the figures available, but I can assure the honourable Member that the medical officers, who are themselves Australians, are fully alive to the point and all precautions are being taken.

Infectious Disease and the Discharge of Soldiers.

Sir CHARLES NICHOLSON asked the Financial Secretary to the War Office whether it was the case that no soldier was discharged from the Army, except for tuberculosis, into civil life whilst still in an infectious condition owing to any illness, and particularly any venereal disease; and whether, that was to say, such a soldier was retained under treatment until all danger of infection to others had passed, especially as regards any venereal disease.—Mr. FORSTER wrote in reply: Yes, sir.

T.N.T. Poisoning.

Mr. ANDERSON asked the Home Secretary whether his attention had been called to the inquest on Mrs. Lydia Elizabeth Gibson, aged 24, of Ponder's End, Enfield, who died in St. Bartholomew's Hospital from the effects of T.N.T. poisoning; whether he was aware that it was stated on evidence that the recommendations and precautions against this industrial disease were not being observed at Woolwich; that it was stated by Dr. Collis, the Home Office medical inspector, that as regards the health of women examiners the whole machinery of protection against poisoning had broken down; that the coroner declared that such cases occurred time and again and that it was impossible to find out who was responsible; and whether he would say what further action was to be taken to protect all concerned against the poisonous effect of T.N.T.—Mr. H. SAMUEL replied: The deceased in this case was an examiner in the service of the Inspection Department of the Ministry of Munitions, and was employed by that department at a factory in the north of London, and the usual precautions had not been carried out in her case owing to a misunderstanding as to her position. It was to this point Dr. Collis drew attention at the inquest. No reference was made to the conditions at Woolwich, where, I am informed, the greatest care is exercised, nor was the deceased in any way connected with the Arsenal, but the Inspection Department used to have its headquarters at Woolwich, and its examiners were, and still frequently are, referred to as Woolwich examiners. This no doubt gave rise to the erroneous impression that the Arsenal authorities were concerned in the case. As regards the steps being taken to protect workers against this disease, I would refer the honourable Member to answers to recent questions on this subject.

Physical Condition of School Children.

Mr. ANDERSON asked the Prime Minister whether his attention had been called to the report of Sir George Newman, Chief Medical Officer to the Board of Education, and to his statement that out of the 6,000,000 children in our elementary schools not less than 1,000,000 were so physically or mentally defective or diseased as to be unable to derive reasonable benefit from the education which the State provided; whether he was aware that this state of things was largely due to years of bad housing, insufficient nourishment, and poverty; and whether the Government, in considering after-the-war schemes and policies for the improvement of trade, would also consider schemes of improved social organisation with a view to ridding the country of slums and destitution and placing within reach of all the basis for strong healthy life.—Mr. ASQUITH replied: Yes, sir, these matters are being carefully considered.

Cannock Chase Camps.

Commander WEDGWOOD asked the Financial Secretary to the War Office whether the deaths from pneumonia arising in the Cannock Chase camps during last winter were above the average; whether he had heard complaints as to the condition of the hutments on Cannock Chase; and, if not, would he have an independent inquiry made into the housing conditions on the Chase before the winter came on.—Mr. FORSTER wrote in reply: According to the information in the possession of the Army Council there were only six deaths from October, 1915, to April, 1916, two in February, and four in March. No complaints have reached the War Office as to the condition of the hutments on Cannock Chase.

Hospital Accommodation under Canvas.

Commander WEDGWOOD asked the Financial Secretary to the War Office whether it had now been arranged that convalescent hospitals should be under canvas rather than in huts; what, if so, was the type of tent used; was he satisfied that all such tents were watertight, and also with the class of tent and the flooring of such tents; and, if not, will he send a small committee of responsible civilians to inspect all these convalescent tented hospitals.—Mr. FORSTER (in a written answer) replied: It is necessary to expand hospital accommodation from time to time, and hospitals are sometimes put under canvas in climates where patients and convalescents can remain under canvas in winter. Where this is done proper hospital marquees are provided and extra comforts for the winter are also issued. No complaints of the kind suggested by the honourable Member have been received. I cannot agree to the proposal contained in the last sentence of my honourable friend's question.

TUESDAY, NOV. 7TH.

Military Hospitals in Ireland.

Mr. COOTE asked the Secretary for War (1) whether he could give reasons why the military hospitals at Omagh, Enniskillen, Armagh, and Dundalk were closed and the military patients at those depôts sent to the civil infirmaries in each locality; whether these military hospitals were fully equipped for all their needs; and what was the relative cost of military patients per day in the military and civil hospitals respectively; and (2) whether the assistant deputy of military services, Belfast district, was the authority on all military matters connected with his district; was he consulted before the military hospitals at Omagh, Enniskillen, Armagh, and Dundalk were closed; were they closed with his approval; who was the present deputy of military services in Ireland; and what other posts had he held during the last 12 months.—Mr. LLOYD GEORGE replied: The small military hospitals at Omagh, Enniskillen, Armagh, and Dundalk are unsuitable for the reception of sick and wounded from overseas as they are not equipped for the purpose. They are only used therefore for cases which do not require serious medical or surgical treatment. On the other hand, the county hospitals have experienced surgeons and suitable staff, and have expressed a desire to receive sick and wounded from overseas. All parties have much appreciated the new arrangements, and the scheme is working very satisfactorily at a lessened annual cost to the State. Detailed figures of the relative cost are not available. The authority to decide questions of opening or closing hospitals is the General Officer Commanding-in-Chief, Irish Command.

Nerve-shaken Soldiers.

Colonel YATE asked the Secretary to the Local Government Board whether, in view of the number of men who had been discharged from the Army owing to the effects of uncertifiable nerve strain, any steps had been taken by local committees, acting under the instructions of the Central Statutory Committee, to provide convalescent homes, free from detention or suspicion of connexion with lunacy, to which ex-soldiers of this class might go temporarily, with a view to the promotion of recovery and to linking them up again with their ordinary employment.—Mr. HAYES FISHER replied: The Statutory Committee have advised the local committees that various kinds of treatment are required for

nerve-shaken men. The Statutory Committee have been making careful inquiries into this difficult question, and they have under consideration at the present time a scheme under which appropriate cases would be treated and trained in an institution or institutions in which cases of ordinary wounds and illness other than mental would also be received.

Treatment of Tuberculosis in Scotland.

Mr. MACCALLUM SCOTT asked the Secretary for Scotland whether any steps were being taken to secure throughout Scotland greater progress in combating tuberculosis by any of the following methods—viz., by securing more careful diagnosis of cases in which there was any possibility of tuberculous disease and consequently more general notification in the earlier stages, an improvement of housing conditions, and the establishment and development of after-care committees for the supervision of cases after institutional treatment and for assisting patients to qualify for a suitable change of employment. Mr. TENNANT replied: I recognise the importance of the subject raised by my honourable friend, and have consulted with the Local Government Board for Scotland, who will lose no opportunity of encouraging local authorities, so far as practicable under existing conditions, to deal with the problem of tuberculosis by any available method. I cannot go into greater detail within the limits of a Parliamentary question and answer.

WEDNESDAY, NOV. 8TH.

Medical Students and Military Service.

Answering Captain O'NEILL, Mr. FORSTER (Financial Secretary to the War Office) said: Under instructions issued last August medical students of any year, who have been duly registered in the books of the General Medical Council and who are not fit for general service, are to be relegated to the Reserve and required to continue their medical studies. I have no figures available of the number so released.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

- CULLEN, J. R. F., M.B., C.M. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Acts, for the Alexandria District of the county of Dumfries.
- ELLIOTT, G. C., M.D. Edin., Certifying Surgeon under the Factory and Workshop Acts for the Stafford No. 2 District of the county of Stafford.
- MCKENDRICK, G. B., L.R.C.P. & S. Edin., L.F.P.S. Glasg., Certifying Surgeon under the Factory and Workshop Acts for the Pollokshaws District of the county of Lanark.
- SMITH, MALL, M.R.C.S., L.R.C.P., Senior Obstetric Assistant to the Royal Free Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

- BARROW-IN-FURNESS, NORTH LONSDALE HOSPITAL.—House Surgeon. Salary £250 per annum, with board, &c.
- BOURNEMOUTH, ROYAL VICTORIA AND WEST HANTS HOSPITAL (Boscombe Branch).—House Surgeon for six months. Salary £125, with board, &c.
- BRISTOL, CLIFTON DISPENSARY.—Resident Medical Officer. Salary £200 per annum, with furnished house.
- BRISTOL GENERAL HOSPITAL.—Casualty House Surgeon. Salary at rate of £175 per annum, with board, &c.
- BRISTOL ROYAL INFIRMARY.—House Physician. Salary at rate of £120 per annum, with board, &c.
- CHESTER ROYAL INFIRMARY.—House Surgeon and House Physician. Salary £180 and £160 respectively, with board, &c.
- DARLINGTON HOSPITAL AND DISPENSARY.—House Surgeon. Salary £200 per annum, with board, &c.
- DARTMOOR SANATORIUM.—Medical Assistant.
- DERBYSHIRE ROYAL INFIRMARY.—House Physician and Casualty Officer. Salary £220 per annum, with board, &c.
- FOLKESTONE, ROYAL VICTORIA HOSPITAL.—Resident Medical Officer. Salary £200 per annum, with board, &c.
- GREAT NORTHERN CENTRAL HOSPITAL, Holloway, London, N.—House Surgeon for six months. Salary at rate of £100 per annum, with board, &c.
- HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Assistant Resident Medical Officer. Salary £103 per annum, with board, &c. Also House Physician for six months. Salary 33 guineas.
- LEEDS INDOOR INSTITUTIONS, Beckett-street.—Female Assistant Medical Officer. Salary £225 per annum, with three meals daily.
- LIVERPOOL, BROWNLOW HILL INSTITUTION.—Resident Assistant Medical Officer. Salary at rate of £300 per annum, with rations, &c.
- LONDON HOMOPATHIC HOSPITAL, Great Ormond-street, London, W.C.—Resident Medical Officers. Salary £80 per annum, with board, &c.
- MANCHESTER COUNTY ASYLUM, Prestwich.—Locum Tenens. Salary £7 7s. per week, with board, &c.

- NEW HOSPITAL FOR WOMEN, Euston-road.—Temporary Female Assistant Surgeon for six months. Also Female House Physician, Two House Surgeons, and Obstetric Assistant for six months. Salaries at rate of £50 per annum, with board, &c. Also Anaesthetist. Salary £10 10s. Also Clinical Assistant for Ophthalmic Department.
- NORDBACH-UPON-MENDIP SANATORIUM.—Assistant Medical Officer. Salary £200 per annum, with board, &c.
- PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—Temporary Pathologist. Salary £125 per annum, with lunch.
- QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone.—Physician to Infant Consultation Centre.
- ROTTERHAM HOSPITAL.—Junior House Surgeon. Salary as arranged, with board, &c.
- SHEFFIELD, ECCLESALL BIERLOW UNION INFIRMARY.—Assistant Medical Officer. Salary £200, with board, &c.
- SIDMOUTH URBAN DISTRICT COUNCIL.—Medical Officer of Health. Salary £100 per annum.
- SOUTHAMPTON PARISH.—Resident Assistant Medical Officer for the Infirmary, Shirley Warren. Salary £250 per annum, with board, &c.
- STOCKPORT COUNTY BOROUGH EDUCATION COMMITTEE.—School Medical Officer. Salary £300 per annum.
- VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST ON THE SEPARATE PRINCIPLE.—Assistant Resident Medical Officer.
- VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Physician. Salary £200 per annum, with board, &c.
- WARRINGTON, WHITECROSS MILITARY HOSPITAL.—Resident House Surgeon. Residence, rations, &c., provided.
- WEST HAM UNION INFIRMARY, Whipps Cross-road, Leytonstone, N.E.—Resident Assistant Medical Officer. Salary £300 per annum, with usual residential allowances.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Ballindine, Mayo; Slieveagh, Cork; and at Lewes, Sussex.

Births, Marriages, and Deaths.

BIRTHS.

- JEFFRIES.—On Oct. 28th, on H.M. Island Ascension, Jessie, the wife of Surgeon Hugh S. Jeffries, R.N.—a daughter.
- MACFIE.—On Oct. 5th, at Deoban, Colchester, the wife of J. D. Macfie, M.B., Tuberculosis Officer to the Essex County Council, temporary Lieutenant, R.A.M.C.—a son.

MARRIAGES.

- BROSTER—THOMAS.—On Nov. 6th, at Christ Church, Highfield, Southampton, Lennox Ross, Captain, R.A.M.C., to Edith M. V., elder daughter of Mr. and Mrs. D. C. J. Thomas, Elm Croft, Wynn-road, Southampton, and Johannesburg.
- CHARLES—BAILEY.—On Nov. 2nd, at Bulth Well Parish Church, George Frederick Charles, Captain, R.A.M.C., to Dorothy Blake Bailey, daughter of the late John R. Bailey, solicitor, of Mark-lane and Leatherhead.
- MARSHALL—MARSHALL.—On Oct. 17th, at May-street Presbyterian Church, Belfast, Robert Marshall, M.B., Captain, R.A.M.C., to Evelyn Mary, only daughter of William Marshall and Mrs. Marshall, Princeton Villa, Bangor, Co. Down.

DEATHS.

- BETTS.—On Oct. 31st, Dr. R. Sidney Betts, Assistant Medical Superintendent to the Milton Asylum, Portsmouth.
- BOWER.—Killed in action, on Oct. 20th, Lieutenant William C. B. Bower, attached Newfoundland Regiment, R.A.M.C., M.R.C.S., L.R.C.P., late of Torkington House, Stamford, Lincs.
- NETTLETON.—On Nov. 5th, at Winfrith, Folkestone, in his 90th year, Harry Thomas, Fleet Paymaster, R.N., M.R.C.S.
- REES.—Died of wounds, on Oct. 30th, Captain Morgan James Rees, R.A.M.C., M.D. Lond., of the Local Government Board, aged 41.
- WHITAKER.—On Oct. 23th, in hospital abroad, Frederick Whitaker, Lieutenant, R.A.M.C., M.A., M.B., B.Ch. Cantab., in his 42nd year.
- N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

BOOKS, ETC., RECEIVED.

- ALLEN, GEORGE, AND UNWIN, London.
The Making of Micky McGhee and Other Stories in Verse. By R. W. Campbell. Price 3s. 6d. net.
- The Flogging Craze. By H. S. Salt. With Foreword by Sir George Greenwood, M.P. Price 2s. 6d. net.
- Poland's Case for Independence: Essays by Various Authors. Price 7s. 6d. net.
- LIPPINCOTT, J. B., COMPANY, London and Philadelphia.
Problems of Physiological and Pathological Chemistry of Metabolism. For Students, Physicians, Biologists, and Chemists. By Dr. Otto von Firth (Vienna). Authorised translation by Allen J. Smith (Pennsylvania). Price 25s. net.
- The Art of Anaesthesia. By Paluel J. Flagg, M.D. Price 15s. net.
- Obstetrics: Normal and Operative. By George P. Shears, F.R.S., M.D. Price 25s. net.
- MURRAY, JOHN, London.
Form and Function: A Contribution to the History of Animal Morphology. By E. S. Russell, M.A., B.Sc., F.Z.S. Price 10s. 6d. net.
- First Aid for the Trenches: Some Simple Instructions for Saving Life that Every Soldier Should Know. By Somerville Hastings, M.S. Lond., F.R.C.S. Eng., Capt. R.A.M.C. (T.F.).
- Man as He Is: Essays in a New Psychology. By Sir Bampfylde Fuller, K.C.S.I., C.I.E., Temp. Major, A.O.D. Price 7s. 6d. net.
- ROCKEFELLER INSTITUTE, New York.
Studies (Reprints). Vol. XXIII.

Notes, Short Comments, and Answers to Correspondents.

A PAINTER AND QUACK.

In the Annual Report of the Council of the Royal College of Surgeons of England for 1916 mention is made of the gift to the Museum in the past year by Dr. G. P. Shuter of a pewter enema syringe of peculiar design, "used by the celebrated painter and notorious quack, Dr. Louthembourg." This refers to Philippe Jacques de Louthembourg, who was born at Fulda (Hesse-Nassau) in 1740, and died in London in 1812. His father was a painter and a disciple of Largillière (1656-1746), but wanted his son to follow a military career; his mother, however, favoured the ministry. He followed his own inclination and became a pupil of Charles Vanloo and in his style imitated Berghem and Wouvermans and Salvator Rosa. He was employed by Garrick in 1771 in scene-painting at Drury Lane, and he is credited with the invention of a kind of moving pictures or panorama, called "Eidophysicon." He was admitted to the Royal Academy in 1782. Among his best-known pictures is the "Defeat of the Spanish Armada, 1588," which is in the possession of the Lords Commissioners of the Admiralty and was lent by them to the Royal Naval Exhibition in 1891. As regards his being a quack, the following extract from "Extraordinary Popular Delusions," which has been sent to us by a correspondent, is amusing:—

"Louthembourg the painter and his wife followed the same profitable trade (lectures on animal magnetism); and such was the infatuation of the people to be witnesses of their strange manipulations, that at times upwards of 3000 persons crowded around their house at Hammersmith, unable to gain admission. The tickets sold at prices varying from one to three guineas. Louthembourg performed his cures by the touch, after the manner of Valentine Greatraks, and finally pretended to a divine mission. An account of his miracles, as they were called, was published in 1789, entitled *A List of New Cures performed by Mr. and Mrs. de Louthembourg, of Hammersmith Terrace, without Medicine; by a Lover of the Lamb of God. Dedicated to his Grace the Archbishop of Canterbury*. This 'Lover of the Lamb of God' was a half-crazy old woman, named Mary Pratt, of Portland Street, Marylebone, who conceived for Mr. and Mrs. de Louthembourg a veneration which almost prompted her to worship them. . . . She stated that from Christmas, 1788, to July, 1789, Dr. Louthembourg and his wife had cured 2000 people, having been made proper recipients to receive divine manuductions; which heavenly and divine influx, coming from the *radix God*, his Divine Majesty had most graciously bestowed upon them to diffuse healing to all, be they deaf, dumb, blind, lame, or halt."

In "Old and New London" will be found a reference to Louthembourg, citing Horace Walpole's letter to the Countess of Ossory, July, 1789:—

"Louthembourg, the painter, is termed an inspired physician, and has 3000 patients. His sovereign panacea is barley-water; I believe it is as efficacious as mesmerism. Baron Swendenborg's disciples multiply also. I am glad of it. The more religions and the more follies the better; they inveigle proselytes from one another." "Particular days were set apart and advertised in the newspapers as 'healing days,' and a portion of the house was given up as a 'healing room.' Patients were admitted to the presence of the artist physician by tickets only. In the end the failure of one of Louthembourg's pretended 'miracles' led to his house being besieged by a riotous mob, and he was compelled to make his escape in the best way he could. He however, subsequently returned to his old quarters at Hammersmith, where he died in 1812."

Louthembourg is buried in Chiswick churchyard, where Hogarth's tomb also is. His epitaph is an amazing example of rhodomontade.

VITAL STATISTICS OF MALTA.

Field-Marshal Lord Methuen, Governor of Malta, has reported to the Colonial Office upon the Colony for the year 1915-16. From this Blue-book it appears that the civil population on April 1st, 1916, was estimated at 220,968 as against 218,542 on April 1st, 1915. The birth-rate in the year under review was 30.45 per mille, compared with 31.81 per mille in the previous year; the average birth-rate for the past 12 years was 35.74 per mille. The death-rate in 1915-16 was 23.15 per mille, as against 20.90 in 1914-15, while the average for the past decade was 22.34 per mille. The number of marriages was 1482, as compared with 1121 in the previous year. The general state of health in Malta and Gozo during the year was good. The total number of cases of undulant fever reported from the fleet and garrison was only six; the number of goats and sheep found infected and destroyed during the year was 603 out of a total of 7613 examined. 4514 persons were successfully vaccinated. The death-rate among children under 12 months was 261.55 per 1000 births, as against 242.48 in the previous year. The death-rate of children under five years was 96.70 per 1000 of the population at that age, as compared with 89.19 in the previous year. In 1915-16, 3637 patients were admitted into the hospitals of Malta and Gozo, as against 3407 for the previous year. There were 424 deaths, as compared with 411 in 1914-15. In addition to these,

141,956 persons were attended by the district medical officers at the Government dispensaries or at their own residences, as against 133,078 in the previous year. There were 764 patients in the Lunatic Asylum on March 31st, 1916. The number of admissions during the year was 148; 51 were discharged as cured, 10 as relieved, 12 not improved, 30 not subjects for the asylum; the number of deaths was 58. The inmates in the Leper Hospital increased from 103 on March 31st, 1915, to 110 at the end of the year; the number of deaths was 14. The highest temperature in the shade was 99.5° F. at Casal Zurrioco on August 31st and the lowest 36.5° at Casal Zeitun on Feb. 5th. The mean temperature for the year was 65.4°, as compared with 63.70 in 1914-15.

THE PROLIFICITY OF OPPOSITE TWINS.

To the Editor of THE LANCET.

SIR,—Your recent correspondents on this subject seem unaware of the conclusive investigation carried out by Sir James Simpson and published under the title "On the Alleged Infecundity of Females Born Co-twin with Males" at the end of the first volume of his collected works. Yet his very reason for putting the results of his inquiry on record is that "the evidence that I have obtained upon the topics in view may probably be fortunate enough to save others from expending time and trouble upon the same research."

His conclusions may briefly be summarised in the statement that whereas sterility in such cases is the rule, though not without exception, in the bovine race, it does not hold good amongst any other animals, and that the human "free-martin" is fertile in the same proportion and to the same degree as other women.

I am, Sir, yours faithfully,

MARION B. ANDREWS.

Belfast, Nov. 6th, 1916.

SAUROL.

IN an interesting note on a bituminous deposit found in a mine in Switzerland not far from Lake Lugano, Dr. Louis Merian, of Zürich, calls attention to the important therapeutic qualities of the oil obtained by distilling this shale, which appears to be in no respect inferior to ichthyol. The shale is taken down to a factory in Meride, where it is subjected to distillation. The black bituminous material becomes inflammable when exposed to air and when struck emits a peculiar sulphurous odour. The resulting purified oil contains from 6 to 7 per cent. of sulphur in organic combination and is now on the market for therapeutic use, direct supplies being obtainable from "The Meride and Besano Bituminous Schists Mining Company, Meride, Switzerland." Dr. Merian has studied the effect of sauroil in skin diseases, and reports good results in eczematous and other conditions. He has also employed it for washing out the urethra and bladder with good results. It has also been employed internally in chronic constipation and in all those cases in which ichthyol has given favourable results. As the supply of ichthyol is restricted, the chief source being in the Austrian Tyrol, it is interesting to note that a Swiss product can replace it without disadvantage, and its cost is considerably less. We have received a specimen of the oil, and in appearance it is indistinguishable from ichthyol, while it readily responds to the test for sulphur and shows altogether characteristics consistent with the statement that it is extracted from bituminous schists rich in fossil fish remains.

JOHN PECHEY.

To the Editor of THE LANCET.

SIR,—I am compiling a biographical memoir of John Pechey (1654-1718), the editor of the first English version of Sydenham, and am desirous of obtaining a sight of the following of his works which are absent from the medical libraries:—

"*Promptuarium Praxeos Medicæ*," &c., 1694; 1702 (cum aliis tract.); and 1718, Amst.; 1695, Lipsiæ, 12mo.

"The Whole Works of Sydenham," &c., fifth edition, 1710 or 1711, London, 8vo.

"*Collections of Acute Diseases*," published separately in five parts, 1686-91; and together in one volume, 1691, London, 8vo.

Perhaps one of your readers will be able to help me.

I am, Sir, yours faithfully,

Nov. 6th, 1916.

GEORGE C. PEACHEY.

THE FALLING BIRTH-RATE.

"Disgusted" writes to us of a married couple in his district with four fine children, of whom the man several times during recent years has thrashed the woman without provocation, so that she aborted. After the first assault the local magistrate dismissed the case. "Disgusted" thinks—and we agree with him on the facts as stated—that heavy penalty should have been inflicted.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Nov. 14th.

PATHOLOGY (Hon. Secretaries—G. W. Goodhart, C. Price-Jones): at 5 P.M.

Communications:

Dr. E. W. Scripture: A New Method of studying the Pathology of Speech.

Dr. Crosswell Shearer, F.R.S., and Dr. H. Warren Crowe: The Role of the Phagocyte in Cerebro-spinal Fever.

N.B.—Will members please note that the meeting will be held at 5 P.M. (instead of 8.30 P.M.).

Wednesday, Nov. 15th.

HISTORY OF MEDICINE (Hon. Secretaries—J. D. Rolleston, Charles Singer): at 5 P.M.

Exhibition (at 4.30 P.M.):

Mr. Macleod Yearsley: Document concerning the King's Evil; and other Exhibits.

Communications:

Mr. D'Arcy Power: A Revised Chapter in the Life of Dr. William Harvey.

Dr. James Rae: The Medical History of the Exiled Stuarts.

Thursday, Nov. 16th.

DERMATOLOGY (Hon. Secretaries—J. E. R. McDonagh, Henry MacCormac): at 5 P.M.

Exhibition of Cases (at 4.30 P.M.).

Friday, Nov. 17th.

OTOLOGY (Hon. Secretaries—E. D. D. Davis, Somerville Hastings): at 5 P.M.

Cases and Specimens:

Will be shown by Mr. W. M. Mollison, Dr. H. Banks Davis, Mr. Somerville Hastings, Mr. E. D. D. Davis.

N.B.—If other members desire to show cases will they please communicate at once with Mr. E. D. D. Davis, 39, Wimpole-street, W.

ELECTRO-THERAPEUTICS (Hon. Secretaries—E. P. Cumberbatch, Robert Knox): at 8.30 P.M.

Discussion:

On "The Treatment of War Injuries by Electrical Methods."

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY.—8.30 P.M., Discussion on Epidemic Nephritis (opened by Capt. Langdon Brown, R.A.M.C.(T.). Followed by Sir W. Osler, Bart., Lieut. J. S. Dunn, R.A.M.C., Mr. W. H. Jessop, Dr. S. West, Mr. J. F. Adler, and Dr. T. J. Horder.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover-square, W.

WEDNESDAY.—8 P.M., Paper:—Dr. C. Singer: The Microscopic Work of the Accademia dei Lincei.

CHILD STUDY SOCIETY LONDON, Royal Sanitary Institute, 90, Buckingham Palace-road, S.W.

THURSDAY.—6 P.M., Discussion:—Experiments in Hand-writing in Schools—Dr. C. W. Kimmins: A Further Account of Speed Tests in Manuscript Writing. Papers:—Mr. W. Scutt: The Artistic Aspect of Manuscript Writing; Mr. J. W. Samuel: Manuscript Writing in a Central School; Mr. A. Sinclair: Manuscript Writing in a Boys' Elementary School. (The papers will be illustrated by lantern slides.)

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

FRIDAY.—5.30 P.M., Papers:—Dr. H. Bayon: The Development of Pathogenic Properties in Protozoa, with Special Reference to the Herpetomonid Group.—Dr. C. H. Treadgold: A Note on the Eggs of the Liver Fluke *Clonorchis sinensis*, var. *Minor* Verdun and Bruyant, 1908.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY AND THURSDAY.—5 P.M., Fitz Patrick Lectures:—Dr. W. H. R. Rivers: Medicine, Magic, and Religion. (Part II.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Course of Lectures on the Anatomy of the Human Body, for First aid and Ambulance Students:—

MONDAY.—5 P.M., Lecture VI.:—Prof. A. Keith: The Spinal Cord and Nerves.

WEDNESDAY.—5 P.M., Lecture VII.:—Prof. A. Keith: The Structures concerned in Shock.

FRIDAY.—5 P.M., Lecture VIII.:—Prof. A. Keith: The Anatomy of Wounds received in Warfare.

Anatomical Preparations and Specimens used for illustration will be on exhibition in the Theatre from 3 P.M. to 5 P.M. on each lecture day, and between 10 A.M. and 5 P.M. in the Hall of the Museum on the following day.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical

and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynecological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics.—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whiphram). Gynecological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whitting).

WEDNESDAY.—Clinics.—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whiphram); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynecological Operations (Dr. A. B. Gilles). Clinics:—Medical Out-patients (Dr. A. J. Whitting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie). Special Demonstration:—Dr. R. M. Leslie: Selected Medical Cases.

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

CHADWICK PUBLIC LECTURES.

TUESDAY (at the Norwich Museum).—3 P.M., Dr. C. Porter: The Health of the Future Citizen—Lecture III., The Child (illustrated with lantern slides).

INSTITUTE OF HYGIENE, 33-34, Devonshire-street (Harley-street), W.

TUESDAY.—4 P.M., Lecture:—Lady Barrett: Venereal Disease—its Racial Effects.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Nov. 8th, 1916.

| Date. | Barometer reduced to Sea Level and 32° F. | Direction of Wind. | Ratio of fall. | Solar Radio in Vacuum. | Maximum Shade. | Min. Temp. | Wet Bulb. | Dry Bulb. | Remarks. |
|--------|---|--------------------|----------------|------------------------|----------------|------------|-----------|-----------|----------|
| Nov. 2 | 29.796 | S.W. | 0.27 | 78 | 55 | 48 | 48 | 49 | Overcast |
| " 3 | 29.640 | S.W. | 0.02 | 69 | 54 | 45 | 49 | 50 | Cloudy |
| " 4 | 29.406 | S.W. | 0.62 | 80 | 55 | 48 | 47 | 49 | Fine |
| " 5 | 28.890 | S. | 0.31 | 69 | 57 | 50 | 50 | 51 | Raining |
| " 6 | 29.390 | S.W. | 0.15 | 83 | 52 | 46 | 45 | 47 | Fine |
| " 7 | 29.126 | S.W. | 0.25 | 83 | 58 | 47 | 51 | 52 | Raining |
| " 8 | 29.010 | W. | 0.46 | 76 | 52 | 48 | 47 | 48 | Cloudy |

The following journals, magazines, &c., have been received:—Canadian Practitioner, Therapeutic Gazette, Dublin Journal of Medical Sciences, Revue de Chirurgie, Philippine Journal of Science, Archives de l'Institut Pasteur de Tunis, Nordiskt Medicinskt Arkiv, British Journal of Dental Science, British Dental Journal, Homoeopathic Recorder, American Journal of Public Health, Biochemical Journal, Medico-Legal Journal.

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It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

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| | |
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Letters, each with enclosure, are also acknowledged from—

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An Inquiry INTO

THE NATURAL HISTORY OF SEPTIC WOUNDS.

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(A Report in Three Sections to the Medical Research Committee.)

SECTION III.¹—TISSUE REACTIONS.

In the previous two sections of the present report I have attempted to collect certain facts relating to Sinuses and Sinus Formation and Vaccine Therapy, reserving the consideration of Tissue Reactions, both general and local, to the present and concluding section.

Many of the present observations are concerned with the phenomena of sinus formation, and in addition complement the conclusions reached after a critical survey of controlled vaccine therapy—namely, the utmost importance of the adoption of immunological methods as an essential and urgently necessary concomitant in the general principles of treatment of the wounds of war, not only as a palliative in the earlier febrile stages, but experimentally and clinically shown to be the intrinsic therapeutic and orderly complementation of the normal defensive processes whereby injured tissues re-establish their integrity and defeat the invasion of infecting micro-organisms.

BLOOD EXAMINATION IN SEPTIC WOUNDS.

In Table VII. I have collected the figures of the total and differential blood counts in certain cases of wound infection. The clinical type of case is indicated, and the day of disease upon which the examination was made is given. The majority of the patients were severely ill at the time the blood was examined. A case of acute streptococcal infection contracted by a nurse in attendance on septic wound cases and two cases of cerebro-spinal meningitis are included for comparison.

Acute gas gangrene.—Cases Nos. 1 to 9 and 37 were clinical gas gangrene. In Nos. 1, 3, 9, and 37 amputation was performed. No. 1 was a fatal case. The blood was taken immediately after amputation of the leg and shows very little departure from normal; a slight increase of leucocytes is noticeable; there were no changes in the red cells and no polikytosis. Case No. 2: Blood obtained on the day before amputation; blebs were present on the skin and contained *B. perfringens*; the leucocyte count is practically normal. In Cases Nos. 4 and 6 secondary hæmorrhage had occurred, which complicates the blood enumeration from the point of view of gas gangrene. Case No. 6 had a very extensive flesh wound; the red cell count was abnormally low in this case as well as in Case No. 5, but the leucocyte count was high. The differential count shows polymorphonuclear leucocytosis. Case No. 9, a severe compound fracture necessitating amputation followed by chronic tetanus, showed considerable leucocytosis, mainly polymorphonuclear; the amputation was performed on the tenth day and the blood count was made five days later. In all 10 cases, *B. malignant oedema*, *B. perfringens*, streptococci, staphylococci and members of the coli group were isolated; in Nos. 1, 2, 4, and 10 *B. perfringens* in enormous numbers was found in the infected tissue.

Severe septic wounds.—Cases Nos. 10, 11, 12, 13, 15, 16, 18, 19, 20, 28, and 34 were without clinical gas gangrene, but had gas bubbles in the pus together with *B. malignant oedema*, *B. perfringens*, *B. Hibler*, *B. proteus*, *B. coli*, streptococci and staphylococci. In case No. 18 the blood count, made after secondary hæmorrhage, showed a great diminution in the red cells count, definite leucocytosis, and a white cell ratio of 1:122. The differential count, taken in conjunction with the total white cell count, shows the

increase to be general, with a slight increase in polymorphonuclears. In Cases Nos. 12 and 34 counts made on the fifty-sixth and twenty-fourth days respectively (both cases were still very ill) showed myelocytes in the blood; these were not seen in the other cases. The total increase in the white blood cells in the average septic wounds is below 20,000 per cubic millimetre.

Streptococcal septicæmia.—In Cases Nos. 17, 23, 27, and 34 streptococci were obtained from the blood during life. In Case No. 34 *B. perfringens* was also obtained. Of these four cases three died and one recovered (34). In Case No. 23 the polymorphonuclears were 89 per cent. In Case No. 34, which recovered, the differential count shows first a normal polymorphonuclear proportion, followed by an increase in their ratio as the case recovered. *Perfringens* and streptococci were isolated from the wound, but *B. malignant oedema* was not found.

Streptococcal infection, blood culture negative, wound positive.—Cases Nos. 14, 21, 23, 25, 30, 35, and 36. The blood enumeration was made somewhat late in Cases Nos. 14, 25, and 35. Case No. 14 gave an almost normal count with the exception that myelocytes formed 2 per cent. of the differential count. Case No. 30 was an industrial accident, a crush of the upper part of the thigh with extensive skin necrosis and foul odour. *B. perfringens* was found in the undermined skin and subcutaneous tissue. Case No. 24, prolonged sepsis commencing with paratyphoid fever and later running on to perineal abscess. The blood count in this case gave the lowest of any of the cases examined. Case No. 33, an instance of streptococcal infection occurring in a nurse, shows the diminution in the hæmoglobin from 90-50 in the course of nine days, with a sharp fall and then a slow rise of the leucocyte ratio. The differential counts give a marked increase of polymorphonuclear cells.

Other Cases.—Nos. 31 and 32 are blood examinations and differential counts in acute and convalescent cerebro-spinal meningitis. Case No. 29 was a proteus infection in which *B. proteus* was obtained both from the knee-joint wound and the urine. This case shows a low polymorphonuclear count and an increase of leucocytes; the other case showing a low differential count being Case No. 11, a case of gas gangrene without constitutional disturbance.

Emery suggests that the leucocyte count in cases of malignant oedema may be 40,000 or more. In only one case in my series, Case No. 5, was the leucocyte count above 40,000; in this case practically all the cells were polymorphonuclears. The case recovered. In Case No. 2 the blood was taken during the acute stage of infection, but the leucocyte count was not above normal. Case No. 1, a fatal case, blood taken at amputation of thigh, the total leucocytes had only reached 12,000. It is only in the recovered case or during recovery that the full leucocytosis is established.

It seems from a survey of Table VII. that some information is to be obtained from the total and differential blood counts in differentiating gas gangrene and streptococcal septicæmia. Early leucocytosis with a considerable increase of the polymorphonuclear cells is suggestive of the streptococcal infection rather than of commencing malignant oedema, and in view of the histological findings it is probable that the leucocytosis occurring in the later stages of gas gangrene and during recovery is related to the secondary coccal infections of the wound rather than to *B. perfringens*, &c. The degree of anæmia is more pronounced as far as the hæmoglobin is concerned, and a sharp fall in hæmoglobin, with an increase in polymorphonuclear cells in the differential count, points to coccal, perhaps streptococcal, infection. The presence of myelocytes and other signs of tissue irritation occur in late stages of wound infection.

Emery also states that a left deviation of Arneth's count is observed in cases of gas gangrene. In Table VIII. are given eight cases of Arneth's count in acute sepsis. The case numbers given in Table VIII. correspond to Table VII. It will be seen that the left deviation is pronounced in certain cases, more especially in Cases Nos. 12, 14, and 27. In these three cases prolonged sepsis had occurred, and in No. 27 the condition of the patient was desperate. A case of cerebro-spinal meningitis is appended for comparison.

On staining by Giemsa's method or Pappenheim's panoptical method (a combination of Jenner and Giemsa) in blood from cases of severe wound infection, a large number of polymorpho-

¹ Sections I. and II. were published in THE LANCET of July 15th (p. 89) and Sept. 30th (p. 585), 1916, respectively.
No. 4864.

TABLE VII.

| No. | Nature of wound. | Clinical notes of case. | Day of disease. | Vaccine. | Result. | Blood examination.* | | | | | | | | | | Abnormal cells. | | | | |
|-----|---|---|-----------------|----------|------------|---------------------|------------|--------------|--------|------|-----------|------|------|------|--------------|-----------------|----------|-------------|----------------|---|
| | | | | | | Hb. | Red cells. | White cells. | Ratio. | C.I. | Poly. | Lym. | Mon. | Ros. | Myelo-cytes. | Normo-blasts. | Polioid. | Vacu-cytes. | Polycybro-mas. | |
| 1 | Flesh w. both legs, R. arm. | G.S.W. shrapnel. Acute gas gangrene foot 20th day. Amputation. Amp. lower 1/3 thigh, gas gangrene 3rd day. Secondary hemorrhage 10th day. Gas gangrene early, remained local. Very extensive flesh wound, whole of back of thigh split from buttock to knee; gangrene. Operation followed by acute erysipelas and local gas gangrene three months after wound. Localised gas infiltration of tissues, no spread. Amp. humerus 10th day; chronic tetanus, stinking pus. Severe damage to soft tissues, much fever. Very septic and foul wound, no rise of temperature. Gas gangrene confined to leg area wounded. Secondary hemorrhage 29th day. In torpedoed hospital ship, 20 m. in water. Long, slow convalescence; moderate temperature till 14th day. Several secondary abscesses opened. Blood cultures negative. No sequestrum 1 year 3 months. Severe knee-joint infection. Blood culture, streptococci; developed mental symptoms. Secondary hemorrhage 8th day. Brown stinking pus, gas bubbles, no spread. Very severe anaerobic infection, and neck of femur fractured. Acute "flare" after operation, 64th day. Stinking pus, B. aertrycke isolated. Table VI., v. 30. Streptococcal septicæmia. Severe secondary hemorrhage. Extensive flesh wound buttock, gas bubbles in pus. Streptococcal septicæmia. Gas infiltration of leg, tetanus, secondary abscess thigh. Bacilluria, hæmaturia, albuminuria. Munitions accident, perfringens infection. Meningococci in cereb. o-spinal fluid. Streptococcal infection finger, 21 incisions in arm. Temperature down on 14th day, 3rd day delirium and unconscious at times. Severe and extensive flesh injury. B. perfringens isolated from blood, gangrene of wound. Severe wound of arm, heart-block. Streptococcal infection. Knee-joint involved, prolonged sepsis. Gas gangrene in France, opened up. Secondary abscess in thigh 8th day; 10th day recurrent gas gangrene. Amputation. | 5 | V. | Died. | 100 | 5,000,000 | 10,000 | 500 | 1.0 | 67.0-25.0 | 6.0 | 3.0 | 1.0 | 0.0 | 2.5 | — | — | — | — |
| 2 | Rifle grenade, C.C.F. R. foot. | | 20 | V. | Recovered. | 55 | 4,560,000 | 12,057,380 | 380 | 72.5 | 15.0 | 9.0 | 1.0 | 0.0 | — | — | — | — | — | — |
| 3 | Shrapnel W., C.C.F. foot. | | 17 | V. | " | 55 | 5,218,000 | 7,483,744 | 340 | 72.5 | 15.0 | 9.0 | 1.0 | 0.0 | — | — | — | — | — | — |
| 4 | G.S.W. R. shoulder and hand; shattered humerus and scapula. | | 15 | V. | " | 55 | 3,056,000 | 14,967,285 | 285 | 72.5 | 15.0 | 9.0 | 1.0 | 0.0 | — | — | — | — | — | — |
| 5 | G.S.W., C.C.F. R. arm at shoulder. | G.S.W. thigh, C.C.F. G.S.W. R. foot and arm. C.C.F. ulna and radius. C.C.F. humerus. C.C.F. L. humerus. G.S.W., C.C.F. R. femur. G.S.W. L. forearm. C.C.F. L. arm and L. femur. G.S.W., C.C.F. both tibia; shell. G.S.W. arm, thigh, and side, M.B.I. G.S.W. thigh and ankle, M.B.I. Amp. R. arm at shoulder. Explosive L. thigh M.B.I. G.S.W., C.C.F. thigh. C.C.F. L. tibia (kick horse). C.C.F. thigh and pelvis. G.S.W. fract. radius R. " " " " " " G.S.W. thigh. G.S.W. shoulder and left hip, N.B.I. G.S.W. L. shoulder. C.C.F. ankle. Septic w. knee-joint. Leg crushed in works. Cerebro-spinal meningitis. Infected finger (nurse). C.C.F. humerus involving joint and scapula. | 15 | — | " | 55 | 3,248,000 | 45,476,72 | 72 | 43.0 | 45.0 | 7.5 | 0.5 | 1.0 | 0.0 | — | — | — | — | |
| 6 | G.S.W., M.B.I. back, L. thigh, M. tissue injury. | | 38 | — | " | 55 | 4,224,000 | 13,926,324 | 324 | 72.5 | 15.0 | 9.0 | 1.0 | 0.0 | — | — | — | — | — | — |
| 7 | G.S.W. thigh, C.C.F. | | 13 | — | " | 55 | 1,768,000 | 21,203,84 | 84 | 32.0 | 6.0 | 2.0 | 0.0 | 0.0 | — | — | — | — | — | — |
| 8 | G.S.W. R. foot and arm. | | 27 | — | " | 55 | 1,456,000 | 13,947,300 | 300 | 1.0 | 39.0 | 34.0 | 6.0 | 1.0 | 0.0 | — | — | — | — | — |
| 9 | C.C.F. ulna and radius. | 38 | — | " | 55 | 3,600,000 | 14,343,257 | 257 | 64.5 | 12.0 | 6.0 | 1.0 | 0.0 | — | — | — | — | — | — | |
| 10 | C.C.F. humerus. | 172 | — | " | 55 | 3,242,000 | 21,011,153 | 153 | 0.6 | 75.0 | 12.0 | 6.0 | 1.5 | 0.0 | — | — | — | — | — | |
| 11 | C.C.F. L. humerus. | 19 | V. | " | 55 | 3,464,000 | 19,124,182 | 182 | 72.5 | 15.0 | 9.0 | 1.0 | 0.0 | — | — | — | — | — | — | |
| 12 | G.S.W., C.C.F. R. femur. | 5 | V. | " | 50 | 2,716,000 | 14,188,194 | 194 | 0.7 | 9.5 | 7.5 | 2.0 | 0.0 | 0.0 | — | — | — | — | — | |
| 13 | G.S.W. L. forearm. | 15 | V. | " | 60 | 2,934,000 | 14,759,407 | 407 | 0.6 | 4.7 | 1.5 | 0.0 | 0.0 | 0.0 | — | — | — | — | — | |
| 14 | C.C.F. L. arm and L. femur. | 30 | V. | " | 60 | 4,872,000 | 13,346,374 | 374 | 0.6 | 4.7 | 1.5 | 0.0 | 0.0 | 0.0 | — | — | — | — | — | |
| 15 | G.S.W., C.C.F. both tibia; shell. | 75 | V. | " | 75 | 4,664,000 | 10,808,416 | 416 | 0.9 | 54.0 | 40.0 | 4.5 | 2.5 | 0.0 | — | — | — | — | — | |
| 16 | G.S.W. arm, thigh, and side, M.B.I. | 42 | — | " | 65 | 2,000,000 | 20,252,1.0 | 1.0 | 0.9 | 88.5 | 24.5 | 4.0 | 1.0 | 2.0 | — | — | — | — | — | |
| 17 | G.S.W. thigh and ankle, M.B.I. | 63 | — | " | 65 | 5,336,000 | 14,135,417 | 417 | 0.6 | 64.5 | 21.5 | 15.0 | 0.5 | 0.0 | — | — | — | — | — | |
| 18 | Amp. R. arm at shoulder. | 249 | V. | " | 74 | 3,360,000 | 17,046,197 | 197 | 0.9 | 64.0 | 23.0 | 4.0 | 1.0 | 1.5 | 2.0 | — | — | — | — | |
| 19 | Explosive L. thigh M.B.I. | 127 | — | " | 58 | 4,792,000 | 16,838,282 | 282 | 0.6 | 57.5 | 34.5 | 7.0 | 1.5 | 0.0 | — | — | — | — | — | |
| 20 | G.S.W., C.C.F. thigh. | 83 | V. | " | 69 | 3,245,000 | 13,927,200 | 200 | 0.9 | 76.5 | 14.0 | 8.5 | 0.5 | 0.0 | — | — | — | — | — | |
| 21 | C.C.F. L. tibia (kick horse). | 102 | — | " | 68 | 2,600,000 | 13,927,200 | 200 | 0.9 | 76.5 | 14.0 | 8.5 | 0.5 | 0.0 | — | — | — | — | — | |
| 22 | C.C.F. thigh and pelvis. | 61 | Died. | 50 | 2,080,000 | 17,698,122 | 122 | 1.0 | 76.5 | 20.5 | 0.5 | 0.0 | 0.0 | — | — | — | — | — | — | |
| 23 | G.S.W. fract. radius R. | 13 | — | " | 42 | 3,336,000 | 13,721,256 | 256 | 0.7 | 76.5 | 20.5 | 0.5 | 0.0 | 0.0 | — | — | — | — | — | |
| 24 | " " " " " " | 16 | — | " | 50 | 3,136,000 | 17,877,174 | 174 | 0.8 | 67.5 | 25.0 | 2.5 | 1.5 | 0.0 | — | — | — | — | — | |
| 25 | G.S.W., C.C.F. thigh. | 13 | — | " | 42 | 2,708,000 | 19,332,142 | 142 | 0.8 | 67.5 | 25.0 | 2.5 | 1.5 | 0.0 | — | — | — | — | — | |
| 26 | G.S.W. shoulder and left hip, N.B.I. | 65 | — | " | 54 | 4,608,000 | 14,343,329 | 329 | 0.9 | 77.0 | 15.5 | 7.0 | 0.0 | 0.0 | — | — | — | — | — | |
| 27 | G.S.W. L. shoulder. | 111 | — | " | 82 | 3,680,000 | 14,136,454 | 454 | 0.8 | 38.0 | 2.5 | 8.5 | 0.0 | 0.0 | — | — | — | — | — | |
| 28 | C.C.F. ankle. | 71 | Died. | 50 | 952,070 | 3,118,317 | 317 | 0.9 | 65.0 | 27.5 | 10.5 | 1.5 | 0.0 | — | — | — | — | — | — | |
| 29 | Septic w. knee-joint. | 156 | Recovered. | 55 | 4,496,000 | 9,354,499 | 499 | 0.9 | 65.0 | 27.5 | 10.5 | 1.5 | 0.0 | — | — | — | — | — | — | |
| 30 | Leg crushed in works. | 21 | — | " | 55 | 4,024,000 | 15,798,288 | 288 | 0.6 | 18.5 | 27.5 | 2.5 | 0.0 | 0.0 | — | — | — | — | — | |
| 31 | Cerebro-spinal meningitis. | 47 | — | " | 57 | 4,200,000 | 16,066,282 | 282 | 0.6 | 18.5 | 27.5 | 2.5 | 0.0 | 0.0 | — | — | — | — | — | |
| 32 | Infected finger (nurse). | 70 | Recovered | 60 | 4,210,000 | 8,450,543 | 543 | 0.7 | 75.0 | 19.0 | 4.0 | 2.0 | 0.0 | 0.0 | — | — | — | — | — | |
| 33 | C.C.F. humerus involving joint and scapula. | 101 | — | " | 80 | 4,321,000 | 10,601,432 | 432 | 0.8 | 74.5 | 15.0 | 8.5 | 2.0 | 0.0 | — | — | — | — | — | |
| 34 | G.S.W. elbow, M.B.I. | 34 | — | " | 98 | 3,416,000 | 13,096,282 | 282 | 1.4 | 66.5 | 17.5 | 9.0 | 1.0 | 5.0 | 0.0 | — | — | — | — | |
| 35 | Motor accident, C.F. tibia, S.F. femur. | 85 | — | " | 85 | 4,744,000 | 13,891,465 | 465 | 0.9 | 77.0 | 15.5 | 7.0 | 0.0 | 0.0 | — | — | — | — | — | |
| 36 | G.S.W. L. thigh, N.B.I. | 90 | Recovered. | 90 | 3,532,000 | 16,422,220 | 220 | 1.1 | 45.0 | 12.0 | 2.5 | 0.5 | 0.0 | — | — | — | — | — | — | |
| 37 | G.S.W. L. thigh, N.B.I. | 5 | — | " | 80 | 3,944,000 | 15,176,294 | 294 | 0.9 | 81.5 | 13.0 | 6.0 | 0.5 | 0.0 | — | — | — | — | — | |
| 38 | G.S.W. L. thigh, N.B.I. | 8 | — | " | 70 | 2,628,000 | 16,630,158 | 158 | 1.0 | 67.5 | 26.5 | 8.5 | 0.5 | 0.0 | — | — | — | — | — | |
| 39 | G.S.W. L. thigh, N.B.I. | 54 | — | " | 58 | 3,290,000 | 12,880,273 | 273 | 0.9 | 75.5 | 21.0 | 1.0 | 2.5 | 0.0 | — | — | — | — | — | |
| 40 | G.S.W. L. thigh, N.B.I. | 23 | — | " | 72 | 4,400,000 | 14,927,233 | 233 | 0.8 | 64.5 | 20.0 | 17.0 | 0.0 | 0.5 | — | — | — | — | — | |
| 41 | G.S.W. L. thigh, N.B.I. | 109 | — | " | 70 | 3,003,000 | 15,591,200 | 200 | 0.6 | 70.5 | 16.5 | 10.5 | 0.5 | 0.0 | — | — | — | — | — | |
| 42 | G.S.W. L. thigh, N.B.I. | 181 | Recovered. | 80 | 4,500,000 | 14,200,500 | 500 | 0.6 | 91.0 | 9.0 | 0.5 | 0.5 | 0.0 | — | — | — | — | — | — | |

* The italicised figures are the approximate figures for normal blood. † Bacilluria were present in Case 13.

+ Abnormal cell present. —, Abnormal cell not noted.

nuclear cells exhibit acidophile granulation; in addition, the cytoplasmic network is unduly pronounced, irregularity in staining (polychromasia) of nuclei, and occasional cells with marked basophile staining may be found containing azure granules. In the more severe cases myelocytes, mainly

TABLE VIII.—*Acute Sepsis. Arneth's Count.*

| | | Basophiles. | Eosinophiles. | Myelocytes. | Juvenile. | Rod nucleate. | Segmented nucleate. | Lymphocytes. | Large mono-nuclear. |
|----|----------------------------|-------------|---------------|-------------|-----------|---------------|---------------------|--------------|---------------------|
| | Normal blood. | 1.0 | 3.0 | 0.0 | 0.0 | 4.0 | 63.0 | 23.0 | 6.0 |
| | Acute sepsis (Arneth). | 0.0 | 0.0 | 1.0 | 12.0 | 49.0 | 25.0 | 9.3 | 4.0 |
| | Gas gangrene. | 0.0 | 1.0 | 2.5 | 20.5 | 5.0 | 47.0 | 15.0 | 9.0 |
| 1 | Acute sepsis. | 2.5 | 0.5 | 0.5 | 17.5 | 20.5 | 26.5 | 18.0 | 10.0 |
| 12 | " | 2.5 | 1.5 | 2.0 | 3.0 | 16.0 | 48.5 | 25.0 | 2.5 |
| 20 | " | 1.0 | 0.0 | 1.0 | 4.0 | 15.0 | 45.5 | 20.0 | 17.0 |
| 35 | " | 4.0 | 1.5 | 0.0 | 3.5 | 5.0 | 57.5 | 22.5 | 6.5 |
| 36 | " | 0.0 | 0.5 | 2.0 | 2.5 | 7.0 | 61.0 | 16.5 | 10.5 |
| " | " | 0.0 | 4.0 | 0.0 | 23.0 | 14.5 | 26.5 | 23.0 | 9.0 |
| 14 | " | 0.0 | 1.5 | 4.0 | 3.5 | 5.0 | 57.5 | 27.5 | 6.5 |
| 25 | " | 0.0 | 0.0 | 5.0 | 27.5 | 1.0 | 46.0 | 27.5 | 2.5 |
| 27 | " | 1.0 | 1.5 | 5.0 | 12.0 | 4.5 | 50.0 | 17.5 | 9.0 |
| | Cerebro-spinal meningitis. | 1.0 | 1.5 | 5.0 | 12.0 | 4.5 | 50.0 | 17.5 | 9.0 |

basophilic, are to be found, but the general appearance of the polymorphonuclear cells is the most striking, suggesting considerable cell degeneration; probably, notwithstanding the high total of the leucocyte count, a number of the polymorphonuclear cells in the circulating blood are aberrant, and it is questionable if their phagocytic activities remain normal.

HISTOLOGICAL EXAMINATION OF SEPTIC WOUNDS.

During the course of the investigations attention was frequently directed towards the tissue reactions occurring in the wounds, partly by clinical phenomena and partly by observation during surgical operations. Some reference to these tissue reactions has been made from time to time in the preceding sections, and I now propose to detail the more important observed facts which have a direct bearing on the after-history of a wound. It is not possible at the present moment to give a complete survey of the tissue changes taking place in all classes of wounds; time has not allowed examination of all the available material, and consideration of many of the interesting side issues must be reserved until a later date. Certain general facts, however, have come to light, and amongst them some having a practical bearing on clinical treatment. The tissue reactions may be divided into two main categories:—A. The local reactions in the wounded tissues engendered (1) by the impact of the missile, (2) by the bacterial flora developing within the wound. B. The general or systemic reactions produced as a result of changes in the wound itself, resulting in alteration in the blood and symptoms of disease in parts of the body remote from the wound.

I have already noted in passing, and it is essential to recapitulate briefly before proceeding to the description of the histological changes which have been met with, certain facts which mark off the wounds of war from the wounds met with in civil hospital practice and everyday civil life. Practically every gunshot wound, with the possible exception of simple in-and-out wounds of the flesh, show—(a) deep tissue laceration, together with what may be termed *molecular disturbance* and disintegration of the surrounding area; (b) anaerobe infection grafted on to a wound of irregular and radiating form. Some years ago Professor Boys used to exhibit in the course of certain popular lectures, photographs of bullets striking and passing through a pane of glass; the photographs showed curious waves caused by the disturbance of the air radiating from the point and butt of the bullet. Similar waves were seen radiating in all directions from the glass at the moment of impact, and after the bullet had passed through the glass, each particle of the splintered material flying off at various angles possessed a similar V-shaped wave. Now when a bullet strikes flesh or bone the enormous energy in foot pounds possessed by the bullet (circa 200 foot pounds at 200 yards range) must be absorbed by the tissue in the immediate vicinity, splinters of bone are driven off, each with their own degree of

momentum, and the total energy possessed at the moment of impact by the bullet is thus distributed over a wide area, and each particle driven off the bone produces some degree of wound of the soft tissues. Such an illustration, though imperfect—the photographed waves of the bullet and fragments of glass are due to alteration in the density of the air—assists one to visualise the energy absorbed by the tissue when struck by a high-velocity projectile. Much more damage is caused than usually appears on mere inspection or even prolonged surgical examination of such wounds, and I believe that this generalised but microscopic tissue damage is one of the primary factors in the production of gas gangrene.

When a shrapnel ball or shell fragment is removed from a wound, more particularly from bone, a piece of clothing is frequently found driven into the tissue in advance of the metal fragment, and histological examination of wounds shows that, in addition to pieces of clothing, fragments of skin and surface epithelium are also driven in, and at times take root and become grafted on to the deeper tissues. Histological examination of sections of recent wounds frequently shows fragments of skin which have become adherent to the surrounding connective tissue; whether such grafts may eventually prove dangerous only the future can tell.

I have already pointed out in the section on Chronic Sinuses that I have succeeded in isolating anaerobic bacteria from a large series of sinus cases many months after the original wound was inflicted and in numerous cases in which the external wound had completely healed. There is little doubt that the disruption of the tissue radiating from the vicinity of the injury is in a great measure responsible for the persistence of anaerobe bacteria; their method of entrance requires little explanation, clothing and fragments of epithelium driven into the wound produce direct inoculation; thus, in a recent case of a simple in-and-out wound without bone injury mud from the trenches was present on the skin of the thigh near the entrance wound. The mud was scraped off (nearly a gramme was obtained), and from it both *B. perfringens* and *B. malignant* oedema were obtained on cultivation.

Chronic Anaerobic Infection.

Conditions for anaerobic development and persistence in a wound are ideal, and the following case is typical of such persistence.

Vaccine Case No. 19, Table VI. (Section II.), showed spore-forming organisms in the pus films, and *B. malignant* oedema and *B. perfringens* were isolated in pure cultivation. Five days after wounding portions of the broken muscular fibre, comminuted bone, radius and ulna, were excised at time of operation. A further examination of this case was made on the 232nd day; a small sinus was persistent which passed downwards to a cavity in the ulna. X ray photographs showed a small sequestrum lying in the centre of the cavity, surrounded by a great deal of loose callus. The sequestrum was removed and cultures made from it and fragments of the callus. *B. malignant* oedema and *B. perfringens* were recovered.

Histological Examination.

I. *Specimen from operation on fifth day.*—Bone, fibrous and connective tissue, and muscle were found inextricably mixed; here and there scattered throughout the tissue were areas of cell proliferation, in which a considerable number of cocci, staphylococci, and streptococci were seen; a few large bacilli were scattered amongst the cocci, but their numbers were small in comparison with the coccal infection. (Fig. 7.) This area of cell proliferation was mainly situated towards the free surface of the tissue and corresponded to the internal surface of the actual wound cavity. In the deeper layers of the mass cell reaction is nil; bundles of muscle fibres are observed, which have lost their striation. The connective tissue between the bundles is swollen, oedematous, stains badly, while long cracks and mechanical separation of muscle fibre and connective tissue are seen in all directions. The connective-tissue cells stain badly, and a number of greenish-yellow patches and stippling are partly fat globules and partly represent the remains of nuclei. Hematoxylin and eosin fail to show any living nuclei in these regions. A great difference is seen between the inner and the external parts in sections stained by Gram's method. In the depths a considerable number of Gram-positive bacilli and few cocci exist, in the outer layers few Gram-positive bacilli and many cocci are found. In the deeper layers, although the bacteria are mainly confined to the supporting tissue of the muscle bundles, some are seen lying in spaces in the muscular tissue itself, at times between

the individual muscle fibres. (Cp. Fig.) Some of the bacilli stain irregularly, with the curious granular appearance characteristic of *B. perfringens*, but in other areas bacilli with subterminal spores are seen in small groups. The organisms for the most part are arranged with their long axes parallel, and although the structure of the capillary walls is indistinct, the whole appearance suggests that the organisms have travelled along the capillary channels. In some situations the muscular tissue is entirely disintegrated and large masses of bacteria are found, but these areas are few in number, especially when compared with sections presently described, obtained from cases of acute gas gangrene.

It will be seen from the foregoing that both bacteriological and histological examination demonstrated the tissue infection with organisms of two classes, *aerobes* more or less confined to the superficial areas, *anaerobes* mainly present in the depths. The tissue damage evidently contributed in some measure to the bacterial distribution. The description of the section is typical of a large number of wounds investigated. One is struck in examining such cases with the paucity of tissue reaction to the anaerobe infection on the one hand and the tissue necrosis on the other, especially when compared with streptococcal or other usual types of infection.

II. *Specimen of callus and sequestrum removed at operation on 232nd day.*—The sections of the callus stained by hæmatoxylin and eosin showed much loose bony formation and areas of connective-tissue spaces filled throughout with proliferating cells; the nuclei throughout stained normally; in the bone Haversian canals are seen in active formation. Here and there spaces are found throughout the callus in which secondary degeneration has taken place; few nuclei are visible, but fibrous stroma is everywhere evident. The nuclei of portions of the adjacent tissue show vacuoles, are ill-defined; many have disappeared. The areas of secondary degeneration are small and do not make up any considerable proportion of the tissue; in some parts the newly-formed and irregular bone is apparently dead. The cellular elements immediately surrounding the structureless areas stain very deeply, owing to the presence of a mass of polygonal and multinucleated cells, the nuclei of which are in a state of active mitosis; polymorphonuclear cells are to be seen amongst them as well, some with cytoplasm staining brightly with the eosin.

Sections stained with Gram-Weigert.—The clear spaces noted in the hæmatoxylin- and eosin-stained specimens are found to contain bacteria. The islands of structureless bone, surrounded by inflammatory cells, contain numbers of streptococci in long curled chains, the cell proliferation passing right up to the edge of the streptococcal infection. The cells, especially the polymorphonuclears, are seen to contain numerous englobed organisms, mostly diplococci, but a few chains of streptococci are seen. The streptococcal infection is for the most part confined to the free borders of the tissue—namely, that forming the internal wall of the cavity. The sequestrum also showed active cell proliferation, with a similar mass of streptococci at the free borders of the tissue. The clear spaces noted in the hæmatoxylin-eosin specimens and in which the nuclei were unstained, contained a few Gram-positive bacilli; the numbers were small and no bacilli were observed in the tissue cells surrounding. No actual spores were seen, the actual number of Gram-positive anaerobes was small, a fact confirmed by the bacteriological examination; for although both *B. malignant oedema* and *B. perfringens* were recovered subsequently, three or four days elapsed before the bacilli appeared in the cultures.

The histological appearances observed in this sinus and sequestrum are illustrative of numerous similar cases examined. The chief emergent fact is the association of tissue regeneration and tissue degeneration in the same district of the wound, a circumstance closely related to the clinical course observed in many compound comminuted fractures. The anaerobic persistence, associated with minute areas of degeneration in the immediate vicinity of the organisms, to some extent explains the intractability of the "sinuses" and furnishes a clue to "flares" following sinus operations. These facts also support the procedure suggested by Captain C. W. Rowntree of using a tourniquet to facilitate the examination of deep sinus cavities and the removal of minute sequestra, each of which if left in the wound may act as a fresh focus of infection. Lazarus-Barlow,¹ in dealing with reaction to causes of inflammation, says: "But though it may be broadly stated that when the irritant is living the presence of numerous cells at the part is most obvious the statement is not entirely correct." He also further points out how frequently coincident destruction and repair may be observed in tissues infected with micro-organisms. However, although considerable controversy exists as to the source of

the phagocytes which destroy the organisms in an infected area there is general consensus of opinion that phagocytosis is the ultimate process of destruction of the invading bacteria in wounded tissue, yet even after long intervals of time have elapsed from the date of wounding, patches of tissue without phagocytic reaction are invariably found, such tissue stains badly, is apparently undergoing digestion, and is usually found in the vicinity of Gram-positive anaerobic bacteria. On the other hand, on examining a number of sections of wound tissue, areas are found in which phagocytic activity is a prominent feature, and bacteria of the anaerobic variety may be seen engulfed by a number of the cells.

Sir Almroth Wright,² in his lecture before the Royal Society of Medicine, has shown that the *B. perfringens* is readily phagocytosed *in vitro* by polymorphonuclear leucocytes, and d'Este Emery,³ in a modification and amplification of the method suggested by Sir Almroth Wright, gives some interesting details of the conditions determining phagocytosis of *B. perfringens in vitro*; he also suggests that a toxin is elaborated by the organism inducing negative chemiotaxis. On the other hand, a number of observers, amongst whom may be quoted Muriel Robertson⁴ and Taylor,⁵ have found considerable difficulty in obtaining a toxin from *B. perfringens*, while Dale and Barger⁶ only found ammonia from cultures of *B. malignant oedema*. There is reason to suppose, as was suggested at the conclusion of Section I. of my report, that the biological activity of the anaerobes might be of more importance than their infectivity. *B. perfringens* readily produces acid from glucose, from inositol, and from other carbohydrates, and there is not a little evidence to suggest that the curious and rapid changes in muscular tissue in the neighbourhood of perfringens infection is related to the biological production of acid rather than to the liberation of true toxin. I shall recur to this point after discussing the histology of acute gas gangrene.

Acute Gas Gangrene.

The following case is illustrative of the type of acute gas gangrene met with during the inquiry.

The case was admitted on the fifth day with shrapnel wounds of both legs and left upper arm; a large piece of shrapnel was lying embedded in the left calf in close proximity to the upper end of the tibia; there was no bone injury. The radiograph suggested a large amount of gas in the region of the wound, apparently in the subcutaneous tissue and separating it from the muscles and fascia. The leg was amputated through the middle of the thigh. Subsequent dissection of the leg confirmed the diagnosis of gas infiltration; the whole of the subcutaneous tissue from just below the knee-joint to within three inches of the ankle-joint on the posterior surface of the leg, was separated from the muscular layer by the development of large quantities of gas; incision of the leg resulted in the escape of gas in considerable quantities. The muscular tissue was not deeply penetrated, but the surface of the gastrocnemius was undergoing surface digestion; in the immediate region of the wound there was no deep infiltration of the muscle visible to the naked eye. The subcutaneous tissue spaces formed by the gas pressure were occupied by areas of semi-fluid blood clot and hemorrhagic exudation of recent origin; there was no smell. At the upper and lower extremities of the area of gas infiltration, penetration of the subcutaneous tissue by an irregular line of pus formation was found, extending along the intermuscular planes. There was no naked-eye appearance of gas in this region, and the tissues appeared normal in colour and were undigested, but on either side of the area of pus formation beyond the gas-affected parts the subcutaneous tissue, when incised, gave off a quantity of yellow fluid. This yellow fluid contained a number of globules, which on staining by Sudan III were found to be fat. The fluid itself was quite clear, free from cells on microscopic examination, and rapidly stained any linen or dressing material bright yellow. I have already noted this yellow staining as associated with *B. malignant oedema*. On the addition of a small amount of blood to a portion of the fluid, complete clotting occurred in about five minutes, but the fluid itself did not undergo spontaneous coagulation. The subcutaneous tissue from which this fluid exuded was much more yellow than the unaffected areas, and by making a longitudinal section of the skin and subcutaneous tissue throughout the length of the amputated limb, transition from gas infiltration through areas of pus formation, yellow and oedematous and finally normal subcutaneous tissue could be easily traced. Similar phenomena have been observed in all other cases in which immediate dissection of the amputated limb was performed.

Unfortunately, on the day subsequent to the amputation of the thigh, the wound in the left upper arm broke down with severe secondary hæmorrhage, necessitating ligation of the third part of the axillary artery. Within 15 hours of the ligation the internal surface of the upper arm had undergone degenerative changes; the muscles were soft and diffident, particularly the biceps; the skin was dead and in ribbons, the fœtor extremely pronounced, and emphysema was found in the muscle. Amputation was accordingly performed and immediately upon amputation the arm was dissected. A similar condition to that observed in the leg was found; the area of gas infiltration and subcutaneous hæmorrhage was found to extend down the forearm to within two inches of the wrist-joint, but in this area there was no penetration of the muscular tissue. The subcutaneous tissue in the lower part of the upper arm and the upper part of the lower arm was œdematous and exuded yellow fluid which did not clot spontaneously but coagulated on the addition of a small amount of blood; no cells were seen in this fluid, but fat globules were found floating on the surface. The humeral biceps muscle was the one principally involved and was found more affected than the gastrocnemius. On separating the muscles the whole of the biceps was found infiltrated and emphysematous; a portion cut off floated in water and crepitated like a piece of lung. The other muscles of the upper arm were unaffected except superficially where they were in contact with the biceps. The deltoid was quite normal on its outer side and contracted sharply when incised.

In a previous section of the report I have drawn attention to the yellow staining found upon dressings under certain circumstances, and have pointed out that this curious yellow may be found occasionally in cultures on egg broth containing *B. malignant* œdema. The stain sometimes resembles that caused by iodine and was at first attributed to it, but the above description points to tissue disintegration as the source of this yellow-stained lymph, and its presence may be regarded clinically as a sign of progressive tissue destruction calling for careful surgical consideration. Some of the fluid was collected and further examined in the laboratory.

Slight coagulation occurred on boiling, but the coagulum formed was small and the whole fluid did not clot. The portion to which blood had been added after standing for 15 hours separated into loose clot and yellow clear fluid, similar to that obtained from the tissue.

Spectroscopically no absorption bands were seen, and the fluid which separated off from the clot did not contain hæmoglobin bands. On shaking with chloroform the yellow colour passed into the chloroform; this gave no spectroscopic information. On the addition of amyl-alcohol no extraction of colour took place, but general precipitation occurred. The precipitate gave Millon's reaction. On addition of dilute acid to the original fluid a white, somewhat sticky, precipitate formed, insoluble in alkali. Sodium hydrate produced no precipitate in the original fluid. The precipitation of this fluid by dilute acids will be referred to subsequently.

A bacteriological examination was made of the arm and leg; cultivations from every source, including the pus at the spreading edge of the gangrenous area, gave *B. perfringens* and *B. malignant* œdema in addition to streptococci and Gram-negative bacilli. *B. malignant* œdema and *B. perfringens* have been recovered from all the cases I have examined.

Microscopical examination of the muscular tissue attacked by acute gas gangrene gives an extraordinarily striking picture, especially when compared with that of a normal muscle or inflammation of muscle due to other forms of bacterial infection. The outstanding feature in acute gas gangrene, foreshadowed by the examination of chronic anaerobic infection, is the absence of cellular reaction. The actual form of the muscular tissue is not greatly altered at the commencement—that is to say, the muscle bundles remain in their supporting network and in transverse sections are abnormally definite but still show striation. The following description taken from the case of acute gas gangrene described above is typical of the histological findings in all the cases I have investigated.

Portions of the gastrocnemius near the wound and the humeral biceps were removed for histological examination. The portion of the biceps floated when placed in Müller's solution. The specimens were stained by hæmatoxylin and eosin and Gram-Weigert. Both transverse and longitudinal sections show muscle bundles widely separated from one another, the connective-tissue spaces between the main fasciculi are widely dilated, stretched, and in most instances only a small quantity of tissue debris is left which remains attached to the muscle bundle. (Fig. 8.) No cell nuclei are seen; some parts of the fibrous tissue contain granular masses

and granules suggesting disintegrated nuclei; the striation of the muscle bundles has disappeared. The individual muscle fasciculi do not all stain to the same degree, and here and there, scattered throughout the section, spaces are seen representing the position of a muscle bundle which has undergone liquefaction. No individual cells can be made out, no leucocytes and no connective-tissue corpuscles are apparent. Under higher powers many of the muscle bundles are eroded, their edges irregular and diffident, and here and there in the less affected muscles a faint trace of the original striation is observed; many are split into their ultimate fibres.

On examining the Gram-stained specimens with high magnification the whole of the interstitial spaces are found packed with a mass of Gram-positive organisms (Fig. 8), together with some smaller Gram-negative rods; no phagocytosis is seen. The organisms are not free, but are in the tissue spaces and clustered along the lines of the capillary vessels in the supporting tissue; in many instances the network of this tissue can only be traced by the arrangement of the bacteria. Very few organisms are to be found inside the muscle bundles, but this invasion takes place at a later stage, and here and there large spaces are seen in the interior of the muscle bundles containing bacilli resembling *B. perfringens*. In a few instances definite penetration of the muscular tissue is observed, organisms passing inwards from the disrupted edge of the muscle.

The picture is in certain particulars comparable with that of chronic gas gangrene already described, the infection and disruption of the tissue being only one of degree. Where the process has been in operation for rather longer, attempts at repair are found at the edges of the infection. The muscle tissues have lost most of their nuclei in the infected areas, but just outside this area the nuclei are deeply stained and can be traced around the muscle bundles. As the infected area is gradually approached the muscle bundles are found partially digested, staining is unequal, and some fragmentation has taken place, best seen where the muscle is cut longitudinally, proliferation of the connective-tissue corpuscles has commenced, and here and there the proliferation has progressed so far that whole tracts of muscle bundles have been replaced with round-cell infiltration of the usual type, suggesting that the partially dead muscle is being rapidly cleared away. Amongst the cells in the outer limit of the infiltration phagocytes are seen containing bacilli and other cells containing Gram-positive granules, evidently the semi-digested protoplasm of *B. perfringens*. The bacterial flora of this part consist mainly of cocci mixed with a few Gram-positive and a few Gram-negative bacilli. Clinically the gastrocnemius muscle was only slightly affected; the emphysema had not spread throughout the muscle from which the section was made. The appearance of the section suggests that commencing infiltration was in progress, but at the same time defensive tissue reaction was getting the upper hand in the area under examination.

Spore-forming organisms are not always found, but in some cases they are present in considerable numbers. Fig. 9 shows a portion of muscle from such a case; a crack, probably caused by gas pressure, is seen extending across the upper part of the field, and another commencing split is seen in which are a number of spore-forming organisms of the malignant œdema type. The granular stippled appearance is also well shown. In other portions of this section areas are seen occupied by organisms without spores and staining with the curious Gram-granular effect so often seen in *B. perfringens*. Fig. 10 is such a field obtained from the same case. Figs. 11 and 12 are from the extreme limits of the gangrenous process; Fig. 11 showing a small ruptured vessel the walls of which are outlined by the mass of Gram-positive bacilli adhering to them, a clear gas space exists between the vessel and the muscle tissue in which numerous phagocytic cells are seen packed full of Gram-positive bacilli; a good many free unphagocyted organisms are also seen in the intercellular spaces. The lower part of the photomicrograph shows a tissue space probably due to gas splitting.

Fig. 12 is a photograph of the same area but under a lower power than Fig. 11. This section shows the relationship of the area of tissue reaction to the source of infection, a small vessel the wall of which has given way. The wall of the vessel is clearly outlined by a dark line which, on examination with a high power, is seen to consist of a mass of Gram-positive bacilli adhering to the vessel walls. The connective-tissue spaces are seen on the other side in the vicinity of the blood-vessel. These specimens are stained by Gram-Weigert. In the hæmatoxylin-eosin specimens the nuclei stain deeply, and many well-defined mitoses may be seen. A little below this part, not shown in the photograph, the tissue is undergoing coagulation necrosis, and the nuclear staining is indistinct. Attempted repair has therefore progressed to a certain point and has then ceased, some influence having destroyed the tissue vitality.

A small portion of subcutaneous tissue was removed from the extreme limits of the gangrene of this case. Pus

formation had commenced, and although no actual discharge or abscess cavity had formed the tissues were impregnated with milky purulent fluid which microscopically showed numerous phagocytic polymorphonuclear cells. The tissue in this region was 8 inches distant from the actual site of injury. A large amount of fibrous tissue was in course of formation; organisms, many of them partially digested, were found within the cells; the majority of these organisms were cocci. Bacilli were few in number.

Summary of the Pathological Histology of Gas Gangrene.

Throughout the greater part of the affected tissues the cells are dead, the nuclei have disappeared, and no trace of defensive tissue reaction is to be found. Scattered through the supporting fibrous and cellular tissue are enormous numbers of Gram-positive bacilli, mainly confined to this tissue but also invading the muscle bundles. The destruction of the tissues is so complete that it might be compared to the devastated and blackened country over which a prairie fire has passed, leaving but a few withered and shrivelled tree trunks in its wake. In the region of the actual wound where the primary infection commences, cocci and Gram-negative bacilli in addition to the anaerobic Gram-positive bacilli are found; the cell reaction is intense, and the destroyed tissues are in an active stage of repair by round-cell infiltration.

The mere occlusion of the circulation, either by thrombosis or by gas pressure, is hardly sufficient to determine the extraordinary disappearance of cell structure in a comparative short time—10 to 15 hours—and the phenomena point overwhelmingly to the generalised action of some rapidly diffusing protoplasmic poison.

In a recent communication Cuthbert Wallace⁷ gives a very valuable description of gas gangrene as seen at the casualty clearing stations. He cites a case in which microscopical in addition to bacteriological examinations were carried out by Captain J. W. McNee, Captain E. Roberts, and Lieutenant Dunn. Sections of the affected muscles showed that the fibres had lost their transverse striation, the muscle substance was broken up in transverse plates or presented longitudinal markings as if painted with a coarse brush. Between the fibres, which were obviously separated from one another, were bacteria in varying quantities in the inter-fibrillar spaces. There were some polymorphonuclear leucocytes. Wallace makes a number of extremely important observations; he says that the lesion in its early stages is apparently longitudinal, running up and down the muscles. Muscles and groups of muscles are involved while others escape. There is little tendency for the infection to pass from one muscle to another. Crepitation is apparently a late phenomenon. Gas crepitation develops in the later stages of the disease. Wallace quotes the paper I have already referred to by Mullally and McNee,⁸ in which secondary gas gangrene occurred at the site of hypodermic injections. A similar case occurred in my own series, in which gas gangrene developed in the track of saline infusion, performed in the chest wall during amputation in a case of gas gangrene of the thigh.

Wallace further states that "many men who die of the effects of gas gangrene in the clearing stations die before there is any marked suppuration; it may be that the supuration and involvement of the fascial planes are seen after the patients have left the front, being a late manifestation of the disease." This supposition is borne out by my own observations made upon cases which have been incised for gas gangrene in France and hospitals in this country. The cases already quoted in which suppurative areas were found at the extreme limits of the acute gangrenous process may be taken as one type of sequelæ; the other type, surgical wounds, in which gas bubbles are found in the pus, local spread of the original mixed suppurative process, and radiating areas of tissue-necrosis (incipient gangrene), from which members of the anaerobic group of bacilli can be isolated. Cases have been seen which had been operated upon for gas gangrene in France; profuse discharge of pus was present, and in the pus both *B. perfringens* and *B. malignant oedema* were isolated without difficulty, showing that whilst the actual organisms of gas gangrene are still present in the wound, the surgical expedient of wide incision had limited the development of further spreading gangrene. In Tables V. and VI. (Section II.) the bacteriology of this type of case is given and the relative proportion of the species of bacteria is seen to be the chief difference between acute gas gangrene and chronic or subacute anaerobic inflammation.

Wallace suggests that the infection travels inside the vessels just before or after the circulation has ceased, the open ends of the vessels on the infected wound being the starting point. There is no doubt that this is the right explanation in the early stage. The description of the histology given above and the illustrations, Figs. 11 and 12, support the view that blood infection is the important channel of dissemination. The rapidity with which the disease spreads, the intimate relation of the organisms to the blood-vessels, and the fact that they are found within the vessels, demonstrate that they have entered before coagulation occurs. The occasional exacerbation of symptoms of gas gangrene after "subsequent" surgical interference confirms the view that the open ends of the vessels are the portal of entrance. In the chronic or recurrent cases the local development of gas may split and open the tissues, thus allowing the organisms to enter the vessels. There is another and probably a more important factor in the spread of infection which has support from clinical and bacteriological evidence—i.e., the elaboration of digestive enzymes in the affected areas. We have evidence in the first place that recurrent secondary hæmorrhage takes place from a wound; this point has already been dealt with in Section II., Table VI., and also in Section I. in discussing sinus formation. Secondly, the bacteria isolated from the wound in such cases are organisms whose proteolytic activity is demonstrable—i.e., *B. malignant oedema*, *B. proteus*. Further, after many months the tissue from the depth of a sinus has been shown to contain the *B. malignant oedema*, and histologically patches of tissue-necrosis have been observed.

Histological evidence, clinical evidence, and bacteriological evidence therefore may be correlated, and point to tissue digestion as of paramount importance in furthering the spread of gas gangrene. Cuthbert Wallace's observation that single muscles and groups of muscle tend to be affected suggests the infection of a common blood-supply. Emery found that in order to facilitate the development of *B. perfringens* the addition of chalk is of considerable assistance, and that in tubes to which chalk had been added the development of the organisms was accelerated, and that in such tubes the amount of free acid in the medium was small. He also points out in discussing the question, "Is *B. perfringens* actually the cause of gas gangrene?" that the organism, though found mixed with other bacteria in the superficial layers, is present in increasingly great numbers as the deeper layers of the infection are approached. My own

DESCRIPTIONS OF ILLUSTRATIONS.

(I am indebted to my friend, Mr. Cyril Hill, F.R.M.S., for the photographs.)

Fig. 7.—*Localised gas gangrene*.—Compound comminuted fracture of ulna and radius tissue removed at operation five days after injury. Evil-smelling black pus containing many gas bubbles. The tissue shows heavy coccal infection (top right hand) at part corresponding to wound cavity, various large bacilli are seen penetrating the deeper structures, which have lost most of their nuclei. Both *B. perfringens* and *B. malignant oedema* were isolated. Gram-Weigert $\times 1000$.

Fig. 8 (from Case 1, Table VII.).—*Acute gas gangrene*.—Humeral biceps 15 hours after ligation of axillary artery. Section of affected muscle. The muscle bundles are seen widely separated and all connective-tissue structure has disappeared. Large numbers of *B. perfringens* are seen lying in the spaces between the bundles, which in places are undergoing digestion. Stained Gram-Weigert $\times 500$.

Fig. 9.—*Acute gas gangrene*.—Compound comminuted fracture of femur, much oedema, gas infiltration slight but present, a crack probably caused by gas pressure is seen extending across the upper part of the field, and from it another commencing split is seen in which are a number of spore-forming organisms of *B. malignant oedema* type. The muscle from which this section was cut showed general blackening (malignant oedema reaction). Stained Gram-Weigert $\times 1000$.

Fig. 10.—*Acute gas gangrene*.—Extensive flesh wound of thigh; no bone injury. Similar case to Fig. 7, but this section was obtained at a distance from the gas-infiltrated area; the muscle was red, Wallace's "red death" (*B. perfringens* reaction). The remains of a few nuclei are seen and many Gram-positive bacilli. Stained Gram-Weigert $\times 500$.

Fig. 11.—*Acute gas gangrene*.—Deep flesh wound of buttock. Subcutaneous and muscular tissue at the extreme limit of the gas infiltration of the thigh, near knee. The upper part of the figure is the subcutaneous tissue; between it and the muscular tissue is a crack due to gas infiltration. A small vessel, the walls of which are rendered distinct by the Gram-positive organisms adhering to the walls, lies just above the crack, and at two points, one to the right and another to the left, the vessel wall has ruptured. The muscular tissue is full of phagocytes. Stained Gram-Weigert $\times 250$.

Fig. 12.—*Acute gas gangrene*.—A portion of the muscular tissue from the same case more highly magnified showing the commencing disruption of the muscular fibres and the large Gram-positive organisms (*B. perfringens*) within the polymorphonuclear cells. Stained Gram-Weigert $\times 500$.

FIG. 7.



FIG. 8.

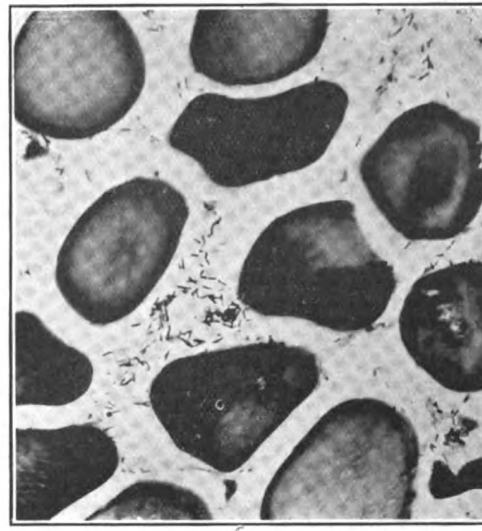


FIG. 9.

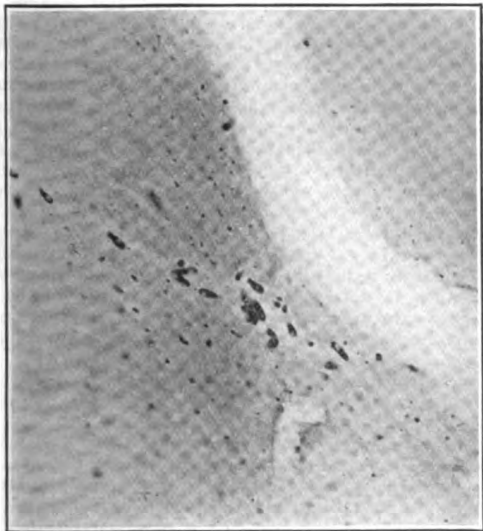


FIG. 10.

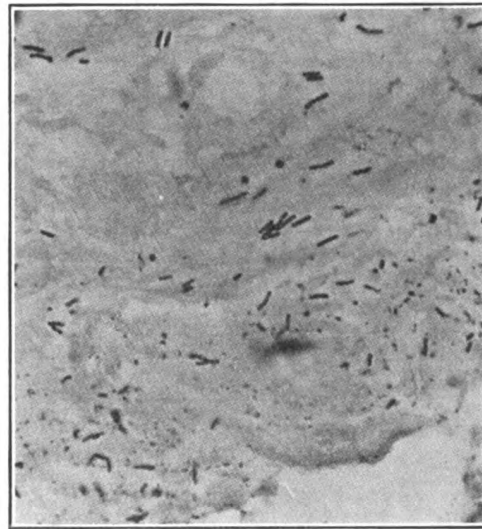
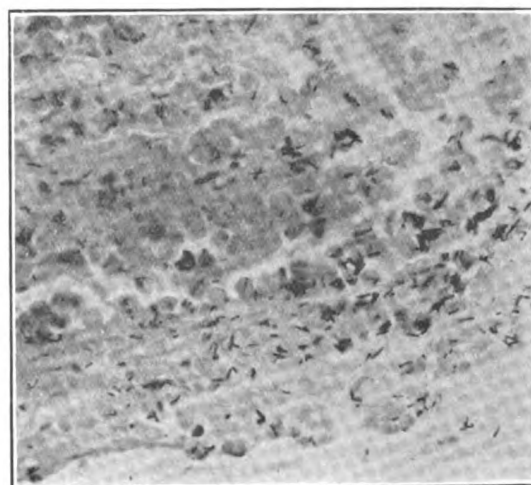


FIG. 11.



FIG. 12.



observation on the histology of gas gangrene given above entirely confirms the presence of the anaerobes in greatest numbers in the deeper parts of the tissue (see Figs. 8, 9, 10, 12). Emery also calls attention to the original experiments of Welch—namely, that if an animal is infected with *B. perfringens*, killed, and then incubated the bacilli grow with great rapidity throughout the body, but are found in greatest numbers and produce the largest amount of gas in those organs which are richest in sugar.

Emery lays down as one of the important factors, if not the most important, in the spread of gas gangrene the inhibition of leucocytic activity by the toxins produced by the organisms. Taylor,² on the other hand, regards the gas fragmentation of the tissues as the chief cause of dissemination, and suggests the gas pressure occludes the circulation in the tissues and further assists the organisms to diffuse. He says: "No cases of subcutaneous infection without previous muscular invasion have been seen among the patients. The pathology is therefore chiefly limited to muscle destruction." He notes a sweet odour of the gas escaping from the wound and that it explodes if lighted with a match. My own observations upon the tissues are substantially in agreement with those of Taylor, but I am inclined to interpret the phenomena somewhat differently, to regard the gas infiltration as a stage of the tissue alteration and coagulation necrosis as the primary lesion. Mullally and McNee and Taylor note the presence of polymorphonuclear leucocytes as usually occurring in the depths of the infection, but in those cases I have examined, as noted above, the outstanding feature of the deep areas of infection is the absence of any cell proliferation. (Fig. 8.) Taylor's illustration of muscle debris with gas bubbles does not show any active cell proliferation. Taylor says the bacilli are massed around the external portions of the muscles. This feature is characteristic of certain muscular fibres, and is, I believe, the second step in the infection, and it is presumably in such areas that rapid gas-formation occurs. The fulminant cases of gas gangrene are accompanied, as the name implies, by enormous development of gas, often taking place with such extraordinary rapidity that the phenomenon has been aptly described as explosive.

General Summary of the Various Ascertained Facts Relating to Acute Gas Gangrene.

- (1) The syndrome is rapid, at times explosive, in onset.
- (2) The histology of the tissues points to widespread and rapid destruction which the occlusion of tissue circulation alone seems inadequate to explain.
- (3) Anaerobic organisms are always demonstrable, *B. perfringens* especially in the areas of extreme gas formation, but *B. malignant* oedema may usually be found on careful examination.
- (4) In 75 per cent. of septic wounds uncomplicated with acute gas gangrene, anaerobic bacteria similar morphologically and culturally with those of gas gangrene are demonstrable.
- (5) The toxicity of *B. perfringens* and *B. malignant* oedema cultures is invariably low even when isolated from fulminant cases.
- (6) Phagocytosis of *B. perfringens* is observed both *in vitro* and *in vivo*.
- (7) The two organisms found in gas gangrene differ in their biological activities. *B. malignant* oedema is essentially proteolytic. *B. perfringens* is essentially a fermenter of carbohydrate.

A critical consideration of the various phenomena relating to the gas production by anaerobic bacteria, especially *B. perfringens*, therefore appears to promise the most likely explanation of the tissue destruction and the march of the disease.

The production of gas by *B. perfringens* upon milk often occurs with extreme rapidity, and is apparently related to some physical balance which having been attained the generation of gas occurs with violence, the milk clot becoming torn and disintegrated; so rapid is the associated production of acid concomitantly that the organisms quickly die off and subcultures from the milk tubes are frequently negative. This phenomenon of sudden gas formation is also exhibited by other anaerobic bacteria; thus, if a suitable medium of magnesium, calcium chloride, &c., in distilled water is prepared, and pure cellulose in the form of filter paper added and a small quantity of Thames mud, the flask

placed under strictly anaerobic conditions and incubated, gas is developed and the filter paper disintegrated. Some time usually elapses before the gas is given off in any quantity, the latent period being up to three days, but when the equilibrium point is reached the action is frequently so violent that the cotton-wool plug may be driven out of the flask. The phenomenon, due to anaerobic cellulose fermenters, is strikingly similar to the sudden development of gas in cases of gas gangrene, and, moreover, again suggests that anaerobic fermentation may have a "critical point" below which activity is slow. Further research in this direction is in progress.

Wallace, in discussing the theories of the disease as suggested by Taylor and Emery, adopts the *via media*, that both views—namely, the primary toxin view of Emery and the gas fragmentation suggested by Taylor—are both of importance in the production of infection. On the other hand, Taylor calls attention to the fact that the production of toxin by the *B. perfringens* is extremely small; this is the experience of all who have attempted to extract the toxin from *B. perfringens* cultures. Emery agrees that the amount of toxin produced is extremely small, but by using 48-hour culture with the addition of chalk the fluid produced inhibition of leucocyte activity, but he says even then all cultures did not give satisfactory results.

Analogy to other infections has led to the postulate of a "toxin" as the cause of tissue destruction in gas gangrene, notwithstanding the fact that the toxicity of broth cultures *in vitro* is extremely small. On the other hand, Dale and Barger have shown that *Vibrio septique* produces toxic material when grown upon muscle, but they showed that this toxic agent was probably free ammonia. Now, when carbohydrates are fermented with gas production various products are formed, among which organic acids and alcohol are paramount. *B. perfringens* is a carbohydrate fermenter, producing acid as well as gas, as may be demonstrated in milk and also in *meat cultivations*. The red colouration of cooked meat produced by *B. perfringens* in the laboratory is exactly similar to the red colouration seen in affected muscles in man and aptly termed by Wallace "red death." The reaction of the *red meat* in culture tubes is acid; so, too, is the *red muscle* in gas gangrene. The muscle sugar and glycogen of the tissues is obviously the substrate from which the gas is derived, and the fermentation of this substrate with gas formation must be associated with a corresponding development of acid, the tissues in cases of gas gangrene giving a distinct acid reaction. Sir Almoth Wright, quoted by Emery, is of opinion that there is a marked decrease in the alkalinity of the blood in cases of gas gangrene.

I have already pointed out above that the tissue changes in gas gangrene are extremely rapid, that tissue coagulation and disappearance of the nuclear staining precede the evolution of gas, and that the destruction of the tissue is more rapid than can be ascribed to the cessation of circulation by gas pressure. The appearances certainly suggest a toxic agent, but the consensus of opinion derived from animal experiment negatives the presence of a highly virulent and diffusible toxin.

Is there any other product of the biological activity of *B. perfringens* which is produced in considerable quantity which can account for the widespread damage? Gas has been suggested, but with inositol and glycogen present in the muscle gas means carbohydrate fermentation, and carbohydrate fermentation with gas production entails production of acid. *B. perfringens* not only produces gas from cooked meat *in vitro*, but turns the meat a curious red, and this red meat gives an acid reaction. The muscles in the vicinity of gas gangrene before they have become riddled with gas have a curious red colour (Wallace's red death). This colouration and that of the meat in the culture tubes are identical. Further, if the acid formed in a culture is neutralised as soon as it is formed, the organisms continue to ferment the substrate with the production of gas until all the available carbohydrate is exhausted; if, therefore, the acid produced from the carbohydrates in the tissues be neutralised as it is formed, continuous fermentation and continuous gas production will take place, there will then be little or no free acid in the tissues; physiologically the fixation of acid by the tissues is possible.

One other point may be adduced. The tissue fluid escaping from the limits of the gangrenous process has been

demonstrated to be precipitated with weak acid, and it is not improbable that the progressive spread of the gangrenous area may be accelerated by precipitation of the oedema fluid in the tissues themselves through the action of the acid produced by carbohydrate fermentation.

It is not suggested that no toxin is produced by *B. perfringens*, although so far no highly virulent one has been obtained, but it seems reasonable to correlate the demonstrable acid production of the organism with the tissue changes found in gas gangrene rather than to postulate a toxin which experiment has so far failed to demonstrate.

CONCLUSIONS.

The conclusions which may be broadly stated arising from the facts scheduled in the third section of my report relate mainly to certain tissue reactions against bacterial infection, and may be briefly summarised:—

(1) That the energy dissipated in the tissues from projectiles produces changes in a wider area than that immediately lacerated by the projectile itself.

(2) That the cellular activity promoting repair in the affected areas proceeds concomitantly with degenerative processes; with the degenerative processes are associated anaerobic bacteria, *B. perfringens*, *B. malignant* oedema, and possibly *B. Hibler* IX. type.

(3) That there is direct histological evidence of tissue digestion, in addition to necrotic changes due to traumatism or coagulation owing to interference with circulation. Evidences of degenerative tissue changes are found in tissue removed from wounds at long periods after the original infection of the wound.

(4) That acid production by anaerobic bacteria of the *perfringens* class is an important factor in the determination of clinical gas gangrene.

(5) That the general blood reaction in the direction of leucocytosis is more related to infection with the pathogenic cocci than the anaerobic bacilli.

In the three sections of the present report an attempt has been made to correlate certain facts obtained in the course of an inquiry as yet uncompleted, and this, the concluding section, is perhaps more an indication of the lines upon which research is proceeding. The examination of the tissue reactions in the wounds has been found to be in close agreement with the general bacteriological details given in the previous sections. The bacteriological data as to the organisms occurring in the depth of the sinus have been confirmed by direct examination of the tissue concerned. The bacteriological evidence of sequestered organisms in the sinus walls of "flare" cases also receives striking confirmation from the histological examination. The evidence adduced confirms the opinion previously expressed that the organisms remaining in the tissue retain their activity and potentiality for disease. Theoretically there is further evidence that the use of vaccine therapy of appropriate antigen is of advantage in combating the infections. Sir Almroth Wright,¹⁰ in his address on wound infections, says:

"None the less we shall do well carefully to consider in connexion with the employment of vaccines in the treatment of imperfectly drained wounds certain questions. It is clearly a matter for consideration whether—despite the fact that the output of pus from the wound is not diminished—there may not be some useful clinical result from the vaccines. In short, it is not unreasonable to think that the antiseptic vaccines might aid the surgeon in his conservative surgery, and might enable him to hold on longer when trying to save a limb.

Sir Almroth Wright thereafter points out the importance of drainage in wound treatment.

The histological evidences I have advanced strongly support the conclusions of the second section of my report and the opinion of Sir Almroth Wright cited above. No drainage in the ordinary sense of the term can easily affect the contorted intricacies of a sinus passing first of all into bony tissue and thereafter radiating in several directions; it is in this type of wound, or rather sequelae to a wound, that the bacteria are found lodged in the tissues, partially shut off from the action of the living cells. Operative interference sets them free; they may, and do, reinfect the surrounding areas, and to raise the patient's resistance to such disability is clearly a therapeutic step of supreme importance.

Continued at foot of next column.

A NOTE ON THE VALUE OF VACCINE THERAPY IN THE TREATMENT OF SEPTIC GUNSHOT WOUNDS.

VIEWED FROM A SURGICAL ASPECT.

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DURING the last two years a very large number of cases of septic gunshot wounds have been under my immediate care, and as some of these have recently been brought into prominence in a series of articles in THE LANCET by my colleague Mr. Kenneth Goadby, under the heading of "An Inquiry into the Natural History of Septic Wounds," it has occurred to me that a short note from the surgical aspect of these cases might prove of benefit to my surgical colleagues who are engaged in similar work to myself in base hospitals.

I must confess that when first I commenced the treatment of these septic cases in September, 1914, I, in common with many surgeons, was inclined to look upon vaccine therapy as of a very minor importance, but after a few months' work with Mr. Goadby became convinced of the value of appropriate vaccines, and now seek his assistance in the treatment of my cases. In our earlier work the routine bacteriological examination of the wounds showed that the large majority were infected with multiple organisms, but nearly all contained a bacillus of the coli or proteus group, pyogenic cocci and anaerobic gas-forming organisms, and it was not long before we recognised that it was the admixture of the proteus and the cocci which paved the way for the anaerobe to invade the tissues in the immediate proximity of the wound and cause the breaking-up of the muscle tissue and the partial digestion which is now recognised in these wounds. Following up this line, I have now had a large number of my cases treated with a mixed vaccine of proteus and streptococcus, and can without any hesitation say that the treatment has to a large extent assisted the other methods of treatment carried out on ordinary surgical lines.

To such an extent have I modified my former views as to the value of vaccine in these cases, that I now direct that every case arriving from overseas with a septic wound should receive an initial dose of a mixed polyvalent vaccine of proteus and streptococcus until the true bacteriology of the individual wound can be worked out and before any surgical measure, other than freely incising the wound to secure adequate drainage, is adopted. This may appear at first glance as a "shot in the dark," but it is only in a comparatively few cases that a mixed infection containing both proteus and streptococcus will not be found, and I would make a note of the necessity of making an examination of both the superficial and the deep aspects of the wound, for we have found so frequently that the deeper part of the wound only will give the true indication of anaerobic activity. The future course of vaccines naturally depends upon the examination revealed in the individual wound, when appropriate combinations can be given.

In some cases operative interference of some sort is necessary as an urgent measure before vaccine therapy can be given, and it is in these cases that the operation is so frequently followed by pyrexia to 102° to 103° F. for from

Continued from preceding column.

Note.—A supply of the sensitised antiseptic vaccine, referred to in the report, is available, and on application will be sent, with full instructions for administration, to any medical officer in charge of hospitals treating septic gunshot wounds.

References.—1. Lazarus-Barlow: General and Experimental Pathology, p. 252. 2. Colonel Sir Almroth Wright: THE LANCET, April 17th, 1915, p. 789. 3. W. d'Este Emery: THE LANCET, May 6th, 1916, p. 948. 4. Muriel Robertson: THE LANCET, Sept. 16th, 1916, p. 516; Journal of Path. and Bact., April, 1916. 5. W. Barger and H. Dale: Brit. Med. Jour., Dec. 4th, 1915, p. 806. 6. Kenneth Taylor: THE LANCET, Jan. 15th, 1916, p. 123. 7. Cuthbert Wallace: Brit. Med. Jour., Sept. 16th, 1916, p. 381. 8. G. T. Mullally and J. W. McNee: Ibid., 1916, i., 478. 9. Kenneth Taylor: Journal of Path. and Bact., vol. xx., No. 4, p. 384. 10. Sir Almroth Wright: THE LANCET, May 17th, 1915, p. 878.

24-48 hours, whereas similar cases in which vaccines have been used usually show no pyrexia even when anaerobic gas-forming organisms were proved to be present in the depth of the wound. In the large majority of cases arriving from overseas I contend that no operation should be performed without the knowledge of the interior of the wound afforded by a thorough radiographic examination, particularly as regards bone injury and the presence of metal fragments, and it is just this time that is so valuable in an attempt to immunise patients against the proteus and streptococcal infection that, in my opinion, it should be done in all cases.

I have found the greatest value of vaccine therapy in the treatment of complicated septic fractures of long bones and of fractures which open into joint cavities. In the treatment of septic compound fractures I now make a routine practice of giving a preliminary dose of polyvalent vaccine (proteus and mixed streptococci), and then after two or three days freely open the wound to secure adequate drainage, approximating the fragments and only removing those fragments which are undoubtedly completely separated, at the same time taking advantage of the opening of the wound to obtain further bacteriological examination. Extension apparatus of various types or splints suitable to the individual fracture are applied, but should the resulting position of the fragments prove on further radiographic examination to be unsatisfactory, I have no hesitation, after a further few doses of specific vaccine, in securing the bone fragments in apposition by means of silver wire or even bone plates in the presence of sepsis, and can now look back on a series of cases in which not only have limbs been saved, but bones in good alignment and functional use. Further, the result as regards sinus formation and necrosis of fragments of bone in the seat of fracture has been more appreciably lessened in those cases in which vaccines have been used than in those in which exactly similar surgical measures were employed without the assistance of vaccines.

In the treatment of septic gunshot fractures which involve a large joint, I am sure that vaccine therapy holds an important place. I have been so disappointed in the past with the ultimate result obtained in these cases, where the resulting immobility of a joint such as the elbow or the shoulder so seriously affects the wage-earning capacity of the patient, that I have, after an immunising course of vaccine, proceeded directly to excise the joint in the presence of sepsis, leaving the cavity freely drained and following with an appropriate specific vaccine. In these cases I have been able to obtain a freely movable and serviceable limb, and a much better result than after excising a fixed joint after the wounds have healed, when the tissues around the joint are so matted by the long-continued suppuration. I hope to be able to refer more fully to the treatment of septic fractures and to fractures involving joints in a future article.

Another feature which has impressed me very forcibly is the freedom from secondary hæmorrhage in cases treated with a polyvalent proteus and streptococcal vaccine. Whereas before its use secondary hæmorrhage was not uncommon in septic wounds, I have had no case under my care in which it has occurred where vaccines have been employed. In my earlier work with Mr. Goadby I kept two wards of cases untreated with vaccine in order to compare the results obtained in wards in which vaccines were used and it was in those cases not treated with vaccine that secondary hæmorrhage occurred. Surely this cannot be a coincidence where exactly similar surgical measures were adopted, but must in some measure be influenced by the vaccine; it seems probable that the control of the proteus and streptococcal infection arrests the digestive action in the tissues of the anaerobic coexisting infection.

I cannot venture to discuss the bacteriological problems involved, but I am convinced of the great use of vaccines as a supplementary treatment to surgical measures in septic wounds, and am satisfied that the routine employment of a polyvalent vaccine of proteus and streptococcus is of value in inhibiting the tissue-necrosis caused by anaerobic bacilli, which are so commonly associated with these organisms in gunshot-wound infection.

I must thank Colonel R. J. S. Simpson, C.M.G., A.D.M.S., Woolwich, for permission to bring forward this note, and especially my colleague, Mr. Goadby, for the enormous amount of work he has undertaken for me in the examination of my cases and for his ready assistance at all times in the preparation of vaccines for the treatment of the cases.

THE PSYCHOLOGY OF MALINGERING AND FUNCTIONAL NEUROSES IN PEACE AND WAR.

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IF individuals complaining of symptoms which are characteristic of hysteria, neurasthenia, or malingering would be so accommodating as to keep within the limits precisely laid down for each of these conditions in our good text-books, the task of the physician dealing with them would be comparatively simple. The fact is, however, that almost invariably the three states mentioned are combined one with another in differing degrees, so that a patient originally hysterical may become neurasthenic, and may also mangle for sympathy or for gain of a more sordid nature. Frequently only two of these disorders are mingled in cases we have to deal with, so it happens that there are in all seven possibilities; a patient may have any of the three conditions in a pure state or any two, or all three at once.

I do not propose here to describe the symptoms and signs of hysteria or neurasthenia in detail, since these can be found in any ordinary text-book of practice of medicine; I shall instead take a few clinical cases as examples and discourse upon them in the light of the experience I have accumulated and the principles which seem to me to emerge therefrom.

Hysteria.

CASE 1.—I was called to see this young woman, and found her lying on a bed, being held down by six people while she was going through the evolutions characteristic of hystero-epilepsy. Her "fit" had already lasted half-an-hour and showed no sign of ceasing. She was waving her arms and legs, wildly jerking her body now up, now down, frequently assuming the opisthotonic posture and resting on her head and heels; at other times she kept banging her head on the pillows. I removed everyone except her mother from the room, laid her on the hard floor instead of the comfortable bed, and suggested that the fit was about to cease and that certain signs about her eyes showed this, adding that if it did not stop within two minutes it would be necessary to throw cold water right over the patient. The "fit" continued in spite of this threat, but having obtained a pail of water, and splashing a little of it on the patient, with the apparent intention of emptying the whole over her if necessary, the patient rapidly recovered. She was put to bed and was quite normal to all appearance next morning.

This was an example of pure hysteria and shows the following characteristics. The cause was emotional and the fit was in the line of an explosion of suppressed and accumulated feelings—a sort of emotional Jacksonian epilepsy. This is very characteristic of hysteria; whether it shows itself as aphonia, paralysis, or as a simple hysterical fit it is in every case an outlet for suppressed emotion, and is associated with a subconscious desire for sympathy or notoriety.

Hysteria is more a lack of will to do right than a will to do wrong. Looking deeper behind that illusive term "will" we find that in the hysterical patient the highest centres cease to control the lower subconscious centres, inhibition gives way, and the abnormal manifestations appear. All my experience of hysteria leads me irresistibly to the conclusion that this disease is nothing but the vicarious expression of unsatisfied desire, usually of a sexual nature. Civilisation and popular morality deny such desires and many other motives, their natural outlet, yet these motives are so powerful that some discharge of all the potential energy they represent must take place, and hysterical symptoms are the result.

All action may be regarded as the modified result of the energy which accumulates in the brain, by the summation of afferent impulses and of the desires (memories of pleasures) which they awake. When there is nothing to prevent the normal and evident action suggested, all is well; the desires are satisfied and the potential energy they represent is dissipated. But when custom, public opinion, conscience, &c., raise objections a struggle ensues; the normal outlet may be prevented, but the potential energy is not used up yet, and accumulates till it compels some expression for itself, and hysterical manifestations result. Who, then, is to blame for the condition—the patient whose desires are clearly beyond her own control,

or the public opinion and laws which deny those desires their normal outlet? I personally blame the unnatural conditions of our so-called civilised life; I pity the individual, while I blame the system and the lack of human charity.

A more profitable line of inquiry is, How are we to prevent or cure such cases? My answer is: In a general way prevention is only to be attained by our resuming or acquiring more natural habits and customs, and this can only come from a more intimate study and knowledge of ourselves and our environment; of Nature and her laws: once these are truly appreciated, they will involuntarily be followed, and evil results of unnatural restrictions (e.g., hysteria) will disappear. Sin after all is merely ignorance. Evil is only folly misunderstood and misnamed. To work out this hypothesis is a wide subject which must be reserved for another occasion.

In any particular case cure is to be sought only in two directions: (1) By arranging that the desires attain a sufficient outlet, e.g., in the case of sexual desires by marriage before the brain has become permanently warped; and, alternatively (2) if this is impossible, then by other forms of occupation the energy which has been finding unnatural expression may be used up through some different channel; hard physical work will prevent lust, and charity may replace a craving for selfish sympathy. Altruism makes in the end for happiness, while egotism leads to misery, worry, and hysteria.

Neurasthenia.

CASE 2.—The patient comes to me complaining that he has lost all his energy, he gets exhausted on the least exertion either mental or bodily, his memory is failing, he has lost all interest in his work and even in his amusements, he suffers from pains in his head and back, he is losing weight, and his sleep has become fitful, uncertain, and unrefreshing, his appetite is poor, he suffers from "indigestion," and he has a sense of depression so deep that he has even contemplated suicide. I find on inquiry that he has been overworking himself for months past; he has also been worried monetarily and at home. He is weak but irritable, and is a pure example of neurasthenia.

Each of us has a banking account in the nerve energy bank, and our state of well-being (in this direction) depends on our balance at this bank. If our expenditure is too great or our income insufficient, our balance inevitably declines or disappears; we may even become entirely bankrupt; we then suffer from neurasthenia. This bank is in our brain cells, and the substance we pay into it is the mother substance of thought and energy—cf., myosinogen in the case of muscle. We make this substance, which I propose to call "ergogen" from our food, if it is sufficient and if our digestion is good; sufficient sleep diminishes our expenditure of it. Work, and especially mental work, and worry use up ergogen and thus diminish our "balance" of it in the brain cells. Cure of neurasthenia is thus to be sought in two directions: (1) By increasing our income of ergogen—i.e., taking sufficient food and digesting it thoroughly; (2) by diminishing our expenditure of this precious substance by sleeping and resting sufficiently, and by avoiding worry as far as may be.

A fact which is sometimes overlooked is that brain cells depleted of ergogen are irritable and hypersensitive, though they are weak for action. I sometimes compare them to a supposititious regiment of old colonels, who would be very irritable and peppery, very prone to wrath, if you trod on their toes, and yet they would be of very little use at digging a trench, or at marching on the toes which seemed so full of energy when trod upon by others.

Another characteristic of neurasthenic patients is their tendency to introspection; hence arise all the various aches and pains from which they suffer and of which they bitterly complain. In many instances they magnify by this means the normal bodily and organic sensations into aches and pains. It is as though they saw their own interiors with the fovea centralis of the mental vision instead of with the retinal periphery of the mind, as the normal man should; or, again, as if they always heard their own internal clock ticking, instead of disregarding its sound as long as it is regular and normal, as we do in the case of a clock ticking regularly in the room we are working in.

Weir Mitchell treatment cures these cases by diminishing work and increasing the ergogenic income by special dieting. Equally effective as a means of cure is residence at a quiet farmhouse, with at first rest, and later a gradually increasing amount of exercise, and good country feeding all the

time. I sometimes tell people to approach as nearly as possible to the type of existence of a turnip, or, if they prefer it, of a lily or a rose.

Malingering.

CASE 3.—A workman in the employment of a public company, which pays half wages to those injured on duty, and who is a member of two clubs and comes under the State insurance scheme as well, has hurt his arm while on duty; he now complains that the shoulder-joint is stiff and that he cannot raise his arm as high as his head. I find on examination now no evidence of past injury or present disease (the alleged accident was ten days ago). On making him place both hands on a chair-back and then step away from it, so that I may examine his back, his head descends readily between his shoulders; I then catch hold of his arm and tell him to stand up, when, of course, he is disappointed to find that he has been tricked into raising his "injured" arm till it is in the same line as his spine, and therefore high above his head, and this although my attempt to raise his arm before had elicited gasps and heartrending wails of pain. As there is a witness present he can no longer deny his fraud. I find on adding up his club money and half-pay under the Workmen's Compensation Act that his income when ill is actually greater than when he is at work. A further temptation in this case was the stupid provision of the Act that a man must be absent for 14 days if he is to be paid compensation right from the date of injury, and so this man was most anxious to remain off work till that period at the least. While dressing himself the man raised his arm quite freely as he put on his shirt.

This was, of course, a case of pure malingering, and there was, as one always finds, a clear motive for feigning disability. The motive was largely a monetary one, but there have been many examples recently of malingering in order to avoid military service. Malingering is an instance of wilful fraud, and is in one sense equivalent to theft, where a monetary gain is the one sought for; but in many of the combined cases, e.g., hysteria plus malingering, the gain looked for may be only notoriety or sympathy (see Case 4).

Combined Cases.

Hysteria and malingering.—Very many cases of hysteria have an element of malingering about them; indeed, hysteria may be looked upon as a sort of subconscious malingering in which the patient herself is deceived as well as, and sometimes even more than, others round her; to this subconscious fraud it is very common to find conscious fraud superadded.

CASE 4.—The patient was brought to me for a wound of the elbow. She was 17 years of age, and had the furtive look so characteristic of this type of hysteria. On examining the wound I found lying on the surface a piece of glass. The wound was a very superficial one, but had a good deal of blood round it, and the dress was also blood-stained. The patient said she had cut her arm by mistake, having put it "through the window" while attempting to open the same. The wound did not look as if it had been caused in this way, and on investigation it was found that the patient had just previously had a quarrel with her governess, and her parents had rather taken the latter's part. Being much annoyed, the patient went up to her own room and almost immediately returned with the wound mentioned; further, it emerged that one of the housemaids had seen from another window her young mistress deliberately break the window with a book. It is evident, therefore, that this was a case of a hysterical girl emotionally upset by a quarrel in which she had got the worst of it, and who deliberately broke the window and then scratched her arm in order to regain the sympathy she had forfeited, and to make those round her sorry that they had been hard upon her. This young lady was addicted to typical fits of hysterical weeping and laughter when emotionally upset.

Hundreds of cases of the combination of malingering and hysteria could be given, but Case 4 is sufficient. It is not surprising that this combination is so common, since the border-line between the conscious and subconscious parts, or rather phases, of our brains is not sharply defined; indeed, the one state passes imperceptibly into the other. "Concentration" passes gradually into reflection and musing, &c., as a river flows into the sea.

A case of hysteria entirely free from malingering is almost a rarity, so frequent and close is the association of the one condition and the other. The aim of the malingering is, however, seldom sordid in these cases, being only for sympathy, or at worst notoriety, as in the case of "blind" or paralysed girls who get their names into the papers every now and then, generally under the heading of "miraculous cures," and so on.

Hysteria and neurasthenia.—The combination of hysteria and neurasthenia is also very common, especially in the

patient's later years; indeed, I think it would be true to say that every uncured case of hysteria will become neurasthenic if the subject lives long enough.

CASE 5.—This patient, 40 years of age, had been typically hysterical in her youth. She never married, though she had had opportunities of doing so, because she did not wish to leave her mother, who would then have had to live quite alone. Two years ago the mother died, and the patient is now a typical hysterical neurasthenic; she has no energy, and she spends most of her time on the sofa, practically her only interest in life being her own complaints, whose name is legion. She is never free from "neuralgic" pains, mostly in the head and spine. She does not really wish to get well. I once nearly cured her by treatment in a nursing home, but finding herself putting on flesh and otherwise making good progress she insisted on coming out of the home and giving up the treatment. Another practitioner now listens to her woes and ministers thereunto.

There is, of course, a stage in these cases where it would be difficult to say whether the disease was more hysterical or neurasthenic; and, indeed, it does not matter much, for the treatment is the important thing, not the name. Wherever neurasthenic symptoms are present it will be well to treat, and if possible remove, them; but it may happen, as in the case just cited, that the hysterical part of the patient will resent the disappearance of any of her beloved symptoms, in which case, if, as is likely, the hysteria is a deeply-ingrained and old-standing disease, cure is very difficult or impossible. We may try to help the sufferer to regain some of the *joie de vivre* and to wish again to get well, and if we succeed in doing this by means of suggestion and the strength of our personality all may go well; but we have to deal with the ever-present harmful autosuggestion of the patient, and results are apt to be disappointing. Marriage, even at a comparatively advanced age, gives perhaps the best hope of cure if only the right man can be found; but the "right man" is usually not forthcoming, and I for one do not blame him.

"*Traumatic neurasthenia*" and "*shell shock*."—The true neurasthenic does not mangle; he is as much deceived as deceiving. It is true that he exaggerates sensations, making in this way mountains out of mole-hills, but this process is quite involuntary, and there is nothing to be gained by him; he really suffers very much as the result of his hypersensitiveness. Many doctors may disagree with this dictum, but I think if they do it will be because they call certain cases neurasthenic which I do not regard as such. For instance, there is a condition following after accidents which is often called "*traumatic neurasthenia*." A workman, it may be, is injured in a tramcar accident; he suffers considerably from shock at the time, and complains thereafter of pains in the head, giddiness, weakness in the back, palpitation, and so on. Such patients frequently mangle, but are they initially and essentially neurasthenic? I think not. I look upon them as late results of an emotional shock, and hold that they are in fact hysterical or mixtures of hysteria and malingering. Only when they have become inveterate, a neurasthenic element may appear, as it does in every hysterical case which lasts long enough; the case then becomes an example of the combination of all the three disorders mentioned above—hysteria, neurasthenia, and malingering. After a shock, for instance being blown up on a ship which is torpedoed, a sailor or passenger may lose his nerve so much that he shudders at the sight or even at the thought of a ship or the sea. This state (in so far as it is unreasonable) I look upon as clearly hysterical, a result of disordered emotions; it is true that it may induce neurasthenia if the man's livelihood entails voyaging, as he will worry for the loss of his occupation and pay, but the condition is not essentially neurasthenic.

Very rarely it may happen that a man who is already neurasthenic may have that condition aggravated or precipitated by an accident, but the accident is here only the last straw, and is not the real cause of the neurasthenia, and such are not the cases which are connoted by the misbegotten term "*traumatic neurasthenia*." Most of the cases of so-called "*shell shock*" are of this nature and very clearly show the stigmata of hysteria; they suffer from such symptoms as stammering, twitching, choreic or convulsive movements, anæsthesias and paræsthesias, all of which are hysteroid manifestations and not neurasthenic, as also are the loss of voice, sight, and sense of identity which are now and then results of "*shell shock*." The strain and worry of war do produce a number of cases of neurasthenia, but

these are just the same as neurasthenia produced by similar causes (overwork and worry) in peace time, and are not the cases which are designated and advertised under the misnomers "*traumatic neurasthenia*" and "*shell shock*," terms whose vulgarity will always be associated in my mind with such horrible expressions as "*Doing your bit*" and "*We shall win through*."

As in all other cases of neurasthenia, these instances just mentioned as being due to the stress and worry of war conditions suffer from a lack of ergogen, and all that is required to cure them is peace, rest, and good country feeding, while the hysterical "*shell shock*" cases require and will be cured by firmer handling on "suggestive" principles. The cases into which malingering (as well as hysteria) enter form a third class to be dealt with similarly, whether they arise as the result of war, of accidents in peaceful times, or of a desire for sympathy or notoriety, as mentioned above.

Conclusions.

Hysteria is to be regarded as a disorder of the sub-conscious phase of the personality, in which suppressed desires and emotions manifest themselves vicariously by symptoms referable to any or all of the cerebral activities, motor, sensory, vaso-motor, or sympathetic. In hysteria the highest conscious centres and cells lose their control over the lower cerebral centres, which then act under the direction of the sub-conscious and emotional areas. The motives being denied outlet in their normal direct course find expression in some perverted and abnormal direction.

Neurasthenia is the state which results when the brain cells are deficient in "ergogen." The patient is bankrupt as far as energy goes, yet hypersensitive of afferent impulses reaching the brain. Rest and nourishment restore the balance of ergogen and so cure the condition. In this disorder a vicious cycle of weakness and worry is common; dyspepsia and depression, &c., may be similarly associated.

Malingering connotes the fraudulent feigning of symptoms or signs of disease selfishly for gain, and is a disease of the highest conscious cerebral centres in the frontal lobes.

As regards these conditions in relation to the war, pensions, and so forth, much harm has resulted from confusion between the three classes of cases referred to above—viz., (1) cases of pure neurasthenia due to overwork or worry; (2) hysteria following shock, i.e. the so-called "*shell shock*"; (3) hysteria combined with malingering, the gain sought for being either exemption from military service or a pension. Besides these there are, of course, cases of pure malingering.

I append in tabular form a résumé of the main distinctions between the conditions here dealt with.

Table showing the Main Distinctions between the Conditions dealt with.

| | Hysteria. | Neurasthenia. | Malingering. | Shock. |
|------------|--|--|---|--|
| Cause. | Heredity; emotional upset; female sex; repressed (generally sexual) desires. | Heredity; worry; overwork; debilitating diseases; masturbation. | Dislike of work; desire for money, ease or sympathy not earned. | Accident; injury, physical, mental; operation; hæmorrhage. |
| Onset. | Sudden, varies. | Gradual, even. | Varies. | Sudden or gradual. |
| Symptoms. | Emotional; mercurial temperament; quick active mind, may be brilliant; protean symptoms involuntary, or may mangle, too; globus, spasms, fits, faints, &c.; "sub-conscious malingering." | Weak for action, but hypersensitive; memory weak; mind and body easily tired; introspective; dyspeptic; depressed and irritable. | Any which are easily feigned; pains in back; giddiness; lost senses, e.g., sight, &c., corresponding with the gain sought for; voluntary and conscious. | Collapse; cold sweat; dilated pupils; weak pulse of low tension; pallor. |
| Cure. | Marriage; full and pleasing occupation; suggestion. | Sleep, rest, and food build up ergogen; exercise later. | Detection, or if it ceases to pay well. | Stimulants, fluids, alkalies, rest, food. |
| Pathology. | Motives get beyond conscious control; "auto-suggestion"; "buried complex." | Brain cells run down; bankrupt of ergogen. | Conscious and fraudulent; a moral cell disease. | Falling blood pressure; brain cells ill supplied with blood. |

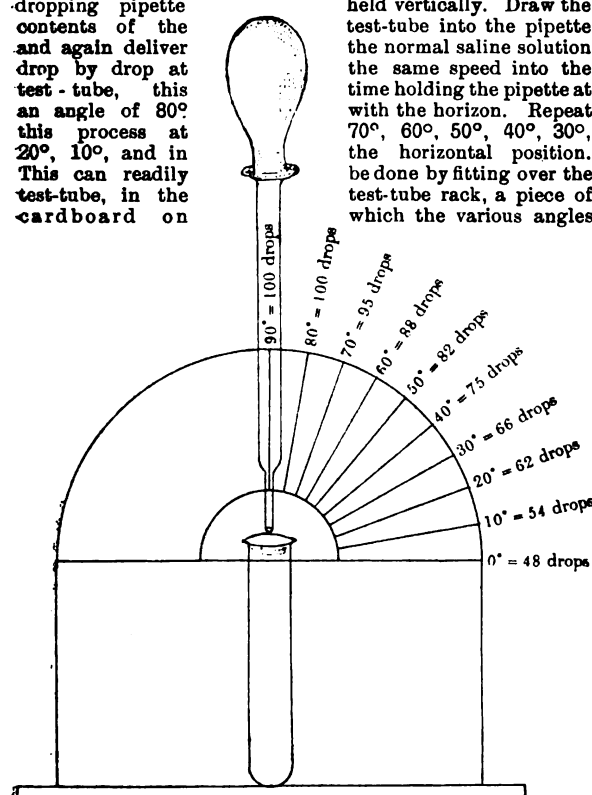
South Eaton-place, W.

THE ANGLE OF THE DROPPING PIPETTE AND ACCURACY IN AGGLUTINATION TECHNIQUE.

By R. P. GARROW, M.D. ABERD., D.P.H.,
CAPTAIN, R.A.M.C.

IN an interesting article on the Serum Reactions of 300 Unselected Cases of "Enteric" in THE LANCET of August 5th, 1916, Professor Ernest Glynn and Dr. E. Cronin Lowe state, *appropos* of accuracy of technique: "It is *probably* advisable (the italics are mine) to hold the dropping pipette at the same angle when distributing the drops." If any doubt exists in their minds on this point it may be readily dispelled by the following simple experiment, which shows it is necessary that, in order to secure accuracy in dilution, the dropping pipette should always be held in a vertical position throughout the entire process of distributing the drops.

Experiment.—Part 1.—Deliver at a uniform speed into a wet test-tube 100 drops of normal saline solution from the dropping pipette contents of the and again deliver drop by drop at test-tube, this an angle of 80° this process at 20°, 10°, and in This can readily test-tube, in the cardboard on



are marked by lines. The dropping pipette is held against these lines while its contents are being delivered into the test-tube. (See diagram.)

Part 2.—Now fill the dropping pipette with normal saline and drop 100 drops at a uniform pace into the test-tube, holding the pipette vertically. Draw up this saline into the pipette again and discharge it a second time with the pipette still held vertically. Repeat ten times.

Result of experiment.—Part 1.—The number of drops obtained for the various angles from the vertical to the horizontal were:—

| | | | | | | | | | | |
|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| Angle... | 90° | 80° | 70° | 60° | 50° | 40° | 30° | 20° | 10° | 0° |
| No. of drops ... | 100 | 100 | 95 | 88 | 82 | 75 | 66 | 62 | 54 | 48 |

Part 2.—The number of drops obtained from the same volume of normal saline discharged at a uniform rate, ten times, the pipette held vertically, were:—

| | | | | | | | | | | |
|-----|-----|----|----|----|----|----|----|----|----|----|
| 100 | 100 | 99 | 99 | 99 | 99 | 98 | 98 | 98 | 98 | 98 |
|-----|-----|----|----|----|----|----|----|----|----|----|

The loss of two drops is, no doubt, due to evaporation.

Conclusions.—1. The number of drops, and therefore the size of each drop, which a dropping pipette will deliver from a given quantity of a liquid varies considerably with the angle at which the pipette is held.

2. For an equal variation of angle—e.g., 10°—the dilution error tends to be greater the further the angle is from the vertical.

3. The only correct position in which to hold a dropping pipette is the *vertical position*. It is the easiest to adopt and maintain accurately, and it is the least liable to error from slight alteration of angle.

4. The drop method, when used intelligently, is an extremely accurate method of making a series of dilutions for the estimation of the relative agglutinating titre of blood serum.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

Epidemic Nephritis.

A MEETING of this society was held on Nov. 13th, Lieutenant-Colonel D'ARCY POWER, the President, being in the chair.

Captain LANGDON BROWN, R.A.M.C., opening a discussion on Epidemic Nephritis, said that acute nephritis was rare in men of military age. In wars it was not common, apart from the American Civil War, in which 14,000 examples of nephritis occurred, but this number included cases both of acute and chronic nephritis. In the central army the number of cases rapidly increased, the incidence rising for 12 months and reaching as high as 1.5 per 1000. This was not repeated in subsequent years. In that war the military conditions were somewhat similar to those of the present war, a rapid advance and retreat being followed by a period of prolonged trench warfare. The units were involved in the same irregular and patchy manner. In our own army, up to the end of June, 1915, there were 1062 cases. Few occurred before February of that year. They increased until 1916, when there was a steady fall. The Belgian Army had been unaffected and the French Army little until July, 1915. In the Mediterranean zone cases did not occur prior to the movement of French troops to that area. A similar outbreak appeared among the German and Austrian troops. The cases on which the paper was based fell into groups. One of 58 studied at St. Bartholomew's Hospital, the other of 108 at the 1st London General Hospital. Nine were from the Mediterranean, the remainder from France. Few officers were included, numbering only 5 of the whole series and two others in addition. The cases were haphazard in their distribution. Only one patient had been in France for less than one month. The numbers increased for each month's stay in France, but fell again after the seven months' period was reached. Exposure could not be held to be of etiological importance, for there were few cases during the worst weather and the number increased after the spring when the violent fluctuations of temperature were passed. In the South African War there were practically no cases of nephritis, although the range of temperature was enormous. The same was true of the Suvla Bay operations and of the Russo-Japanese War. In 22 only of 186 cases in which the point had been elucidated was there a history of the patient having been wet; in the remainder there was no story of exposure. Cold, however, accentuated chronic nephritis. There was no evidence that the affection was dependent upon the water-supply as had been suggested. The solder and lead which might contaminate tinned foods had been blamed by some, but this was not a likely explanation or the condition would have been present in South Africa and Suvla Bay, where tinned foods were much employed. The urine of nephritis of metallic origin was, moreover, of a different character. By others excess of protein and a deficiency of fresh vegetables in the diet were held responsible, but this would not explain the increase in the French Army in July, 1915, nor was

¹ A chart showing the incidence of nephritis among the Northern Armies during the first part of the American Civil War appeared in THE LANCET of Feb. 19th, p. 392.

there any evidence of a co-existent intestinal toxæmia. Wounded soldiers were not especially liable to nephritis. It had been suggested that the nephritis was a complication of an epidemic of a suppressed form of scarlet fever, and the comparative freedom of the Indian troops, who are immune to that infection, was cited in evidence, as well as the occurrence of sore-throat at the beginning of the attack. A history of early sore-throat was obtained in 27 per cent. of his cases, but he regarded it as secondary to the cough. There were many points of similarity between scarlatinal nephritis and this form, but such a view would mean that there had been 10,000 cases of scarlet fever, all suppressed, and all free from desquamation, which seemed impossible. A previous history of nephritis was obtained in 13 only, so it could hardly be due to recrudescence of former nephritis. Nor was antityphoid inoculation the cause, for nephritis had not occurred in a similar manner among the troops at home or in South Africa. That the condition was due to a specific infection was suggested by the fever at the onset and preceding relapses, the spread to the French troops four months after its occurrence among the English and to the Mediterranean area when troops were transferred there from France. Its patchy distribution also resembled that of cerebro-spinal fever. The results of post-mortem examinations pointed to an involvement of the glomeruli and tubules, as in an infective nephritis. Examination of the urine, however, had afforded little support to this view, for of 21 examined bacteriologically 18 were sterile. Blood cultures were also sterile. Various organisms had been isolated from the throats of affected patients, but not more frequently or in greater numbers than among controls, and antibodies to these organisms were not found in excess in the blood. In two cases, however, Dr. Mackenzie Wallis had been able to reproduce albuminuria in rabbits by inoculating them with the urine of affected persons, and this after an incubation period of eight days, which corresponded approximately with the incubation period as estimated clinically. His investigations suggested that the infective agent was ultra-microscopic and filter-passing. A positive Wassermann reaction was obtained in 18 out of 56 cases examined; this might mean a corresponding incidence of syphilis, or, on the other hand, be due to another animal infection such as that by a filter-passing organism [was supposed to be. Considering next the symptoms of the disease, he said that the incubation period was between 6 and 15 days. Premonitory symptoms, according to Captain Abercrombie, were met with in about half the cases, and were bronchitic, febrile, or abdominal (pain and vomiting). (Edema was usually the first symptom noticed, and was present in 97 per cent. of the cases, but generally lasted only a few days and was not often considerable. Early dyspnoea was noticed in 76 per cent., starting usually at the same time as the oedema, but ceasing sooner. It would appear from estimations of the alveolar air that the dyspnoea was not always associated with acidosis, uræmic or otherwise, and was possibly explained by a similar effusion into the lungs. He had not observed the wide fluctuations of the blood pressure described by Abercrombie. The commonest systolic pressure was 140 mm., and there were but few patients with a really high pressure, and these were men who had been painters or plumbers in civil life. The difference between the systolic and diastolic pressures was very considerable, being about 10 c. mm. Hg. These findings would account for the fact that cardiac hypertrophy and arterial changes were little evident. The urine was often much increased in amount, even in the acute cases. Red blood cells were seen in it in 102 of the 166 cases and white corpuscles in 79. A flocculent reddish-brown precipitate containing blood elements was commonly met with. Casts were found in the majority. There were blood casts in 2, epithelial in 37, fatty in 7, granular in 73, hyaline in 58. Retinal changes occurred in 18 per cent. and convulsions in 4 per cent., but these generally yielded quickly to venesection. As occasional symptoms were herpes and parotitis, suggesting an infective origin. Milkiness of the blood serum was not found in any of the specimens withdrawn for the Wassermann reaction except in one fatal case. Two cases only out of the 166 were fatal; in the majority the patient felt well when the oedema had subsided. The albuminuria was intermittent, and often relapsed, ceasing after a period of from 14 weeks to 5 or 6 months. Recovery might be complete after a long period of albuminuria. He considered

that all soldiers who had suffered from nephritis should be regarded as unfit for foreign service, and if the albuminuria persisted for more than four months should be discharged. The diastase output must have returned to normal before a cure could be said to have been established. As treatment he recommended a low nitrogenous diet during the acute stages, but one containing considerable variety. The diet suggested contained 43 grm. of protein, 285 grm. of carbohydrate, and 50 grm. of fat, with a total calorie value of 1815. When the acute stage was over this might be replaced by an ordinary nitrogenous diet, including mutton or fish, and might contain as much as 95 grm. of protein, the total calorie value being 2690. His experience with theocine had been unsatisfactory, the drug appearing to act as a renal irritant as well as a diuretic and being unsuitable in acute cases. The same was true of diuretin. It was impracticable to flush out the kidneys in acute nephritis, but there was a risk in diminishing the intake too much. Hot-air baths had definite limitations; they were only useful if followed by diuresis. For hæmaturia he found no drug of certain value. With dry cupping his experience had been unfortunate. Venesection was valuable for cases not doing well and most efficacious for convulsions.

Lieutenant W. H. DUNN, R.A.M.C., recounted his clinical experience of nephritis in France in the casualty clearing station zone. No composite picture of the symptoms could be drawn, but a fairly clear group could be selected as characteristic. The patients had the appearance of health, showing little anæmia or loss of flesh. Dyspnoea was very common, but not urgent. The urine was usually considerable in amount and seldom diminished. The amount of albumin was usually 2-4 parts per 1000, but in some cases was 8 parts per 1000, and higher figures had been met with. In spite of this the urine was clear and was not smoky. The casts were commonly hyaline and epithelial; blood casts were uncommon. Rapid improvement was the rule. There was usually no fever. In some cases blood was passed in considerable amount; then fever was often associated. He was at a loss to assign any general cause. Against an infective process, like scarlet fever, was the fact that although the troops were in close contact with civilians the latter were unaffected. There was nothing to support the view that the ground was infective in particular areas. He had studied the pathological anatomy in 24 cases in all, of which 17 acute cases and 2 subacute cases were of the kind of nephritis under discussion. Little could be detected by the naked eye, except that on the cut surface of the cortex the glomeruli projected slightly as grey translucent nodules, not as red nodules, such as were seen in ordinary acute nephritis. Microscopically, catarrhal changes in the tubules were indicated chiefly by degeneration of cells; fatty changes were seen in some cells. Tubular hæmorrhages occasionally appeared. The main changes were found in the glomeruli. They were enlarged, and often pouted into the tubules, their cell content being increased. Desquamation of the covering epithelium was sometimes present. The vascularity was diminished. The capillaries were dilated, and contained abnormal nucleated cells. There was little evidence of reaction or degeneration. Proliferation of the epithelium was met with. In two cases total infarction of the tufts was found, due to occlusion of the afferent arterioles. These changes corresponded closely with the book descriptions of glomerular nephritis, and were therefore not new. Special examination of the organs had failed to give any evidence of a bacterial cause. The lungs in one case were found to be acutely emphysematous and oedematous and to contain diffuse patchy hæmorrhages. The spleen also was the site of numerous small hæmorrhages and was slightly enlarged. Similar hæmorrhages were found in the brain. Detailed examination of the lungs showed a peculiar lesion of the walls of the infundibula and ends of the bronchioles. These were prominent and covered by dense fibrin, and had the appearance of having been cauterised. The changes found resembled those following the inhalation of Cl_2 or other irritant gases. The large bronchi showed a similar condition. In two other cases like changes were found, and in four others lesions showing a comparable but not identical change. In six out of the seven there was evidence of thrombosis of the capillaries in relation to the infundibular damage. Hæmorrhages occurred in the spleen and brain in two cases and were apparently embolic in origin. It

seemed that in many there was a process of multiple embolism in being, and this suggested that the kidney lesion was similarly caused, but no thrombi had been found in the glomeruli. In shell-gas poisoning the lung condition was very similar, and thrombosis of the pulmonary capillaries and cerebral hæmorrhages of embolic origin also occurred. In one case the kidney contained thrombi in the glomerular capillaries; in others there were no thrombi there, but proliferation of the endothelium. It was possible that thrombi had previously been present. Although it was not suggested that the nature of the irritant inhaled was drift gas or shell gas, it seemed clear that the origin of this form of nephritis was to be found in capillary embolism, and it might be in emboli derived from the lung lesion, which was of the kind recognised as due to an inhaled irritant.

Mr. W. H. JESSOP said that of 75 cases he had found that 71 per cent. had retinodema with the occurrence of plaques and sometimes of detachment of the retina. There were few hæmorrhages. 57 per cent. of the patients were between 20 and 30 years old. The vessels were unaffected and the blood pressure was normal. All these changes could be watched from time to time and be seen to disappear. He could not but conclude that they were due to toxæmia, as also was the œdema elsewhere.

Mr. J. E. ADLER said that he had met with blood casts on several occasions. He regarded the diastase test as of the utmost value. In acute nephritis there was generally a low diastase reading. In 800 readings it varied from nil to 40. In the majority of cases a diastase value consistently low was evidence of low renal efficiency. Of 69 cases with a low diastase value, 31 showed blood in the urine and 38 no blood; occasionally blood was found with a high diastase reading. The pthalein test was the most valuable. To perform this 6.6 mgm. of pthalein was injected intramuscularly and the bladder emptied 1 hour and 10 minutes later, and every hour up to 3 or 4 hours. The test depended upon the amount excreted at the different hours. The amount excreted during the first hour should equal the total of the amounts passed at the end of the second and third hours. It agreed with the diastase readings in showing that the permeability of the renal cells was markedly decreased in nephritis, and it also indicated the advent of uræmia. The diastase readings and the pthalein test results were generally in agreement, but there were instances when the test was more reliable than the diastase values. The disadvantages of the diastase test were that a 24 hours' specimen was necessary, the readings were variable, much time and special apparatus were required, and the starch had to be made fresh every day. Its use necessitated laboratory work. He thought that both tests should be carried out in every case to enable a decision to be arrived at as to what should be done with the patients.

ROYAL SOCIETY OF MEDICINE.

SECTION OF DERMATOLOGY.

Exhibition of Cases.

A MEETING of this section was held on Oct. 19th, Dr. J. H. STOWERS, the President, being in the chair.

The following cases were shown.

Surgeon D. LOUGHLIN, R.N. (for Dr. H. BATTY SHAW): Case of Leukæmia Cutis. The patient was a man aged 37. Purple-coloured patches first appeared on his body eight months ago. Three months later an ulcer developed over the sacrum, and within another month lumps, which have gradually been getting bigger since, appeared in the skin of the trunk, limbs, and face. The patient was ill, febrile (temperature 101°-102° F.), and had the leonine facies typical of the condition. The lymphatic glands were not enlarged, and neither the liver nor the spleen could be felt. The blood count showed a diminution of red cells, some of which exhibited vacuolation and poikilocytosis; also macrocytes and microcytes were seen. The white cells were absolutely decreased, but there was a relative increase of lymphocytes. The histological specimen showed the typical infiltration of the tissues with lymphocytes.—Dr. F. PARKES WEBER recorded a somewhat similar case, which had been published under the name of Granuloma Fungoides.—The PRESIDENT referred to another case similar to the one shown exhibited by Dr. Lidiard at the first meeting of the Clinical Section.

Dr. H. G. ADAMSON showed, amongst others, a case of Schamberg's Disease. The patient was a man who had a chronic punctate inflammatory condition of the skin on one shin. When the lesions disappeared they left pigmented marks.

Dr. A. WHITFIELD: Cases of Pruritic Dermatitis caused by infection of mange from a kitten. The lesions differed from those of ordinary scabies, as they were small papules surrounded by an oval zone of erythema, and in some instances surmounted by a minute pin-head-sized vesicle looking not unlike a varicella papule. The lesions were generalised, but the fingers and wrists were free. In the kitten the acarid and a run, including eggs and faeces, were found in some scales removed from the skin behind the ears.

Dr. J. H. SEQUEIRA showed, amongst others, a case of Erythremia in a man aged 28.

Dr. S. E. DORE showed a case of Localised Sweating of the Face and Hydrocystoma.

Dr. PARKES WEBER: Case of so-called Multiple Pigment Sarcoma of Kaposi. The patient was a Russian Pole, 26 years of age, who came to England when he was 1 year old. The disease began two years ago on the left hand. Microscopically the lesions were typical—i.e., the most prominent feature was the large quantity of thin-walled blood-vessels surrounded by a number of fibroblasts.

The PRESIDENT exhibited a case of Circumscribed Scleroderma (Morphea) in a girl, aged 7 years, of extremely nervous disposition. The child of healthy parents, she was stated to have developed the disorder a few weeks after being suddenly awakened at midnight by a bomb explosion one year ago.

An abstract of a paper on Acnitis in an Egyptian soldier was communicated by Dr. A. G. CHALMERS and Dr. J. MARTYN, and illustrations were exhibited.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—The first meeting of the session was held at the Leeds General Infirmary on Oct. 27th, Mr. W. R. Bates, the President, being in the chair.—The President gave some notes of cases that he had had the opportunity of observing over a long period. The cases described were of considerable clinical variety, and showed how uncertain was the element of prognosis.—Professor J. B. Hellier read a paper on the Treatment of Placenta Prævia, in which he discussed the place of Cæsarean section in dealing with this condition. He said that when there had been one well-marked hæmorrhage modern opinion was strongly in favour of terminating the pregnancy without delay. Given a patient who was not in labour and who had an uninfected genital canal, Cæsarean section by a man accustomed to abdominal surgery might be strongly recommended. He quoted three cases in point. In one a woman, who had a severe attack of flooding, had been treated expectantly, and a second attack of flooding had proved fatal before she could be delivered by version. In two other cases, after the first hæmorrhage he had performed Cæsarean section and had saved both mothers and children. He recommended that such cases should be transferred to nursing home or hospital after the first hæmorrhage for treatment by hysterotomy. He did not say that all cases of placenta prævia should be treated by Cæsarean section, and many would still be treated by version, but he strongly insisted on the importance of waiting after version had been performed till the uterus expelled the child by natural efforts.—The President showed three original photographs taken by Captain Shearer, R.A.M.C., by his method of depicting organs *in situ* in the living body: (1) Brain and medulla, (2) brain showing hæmorrhage into arachnoid and cerebral abscess, (3) normal intestines.—Mr. G. O. Hayes showed some cases of inoperable malignant disease which had been treated with diathermy with considerable benefit.—Mr. J. F. Dobson and Dr. J. Stewart showed a patient for whom an ileocolostomy was performed three years ago for advanced rheumatoid arthritis.—Specimens were shown by Mr. L. R. Braithwaite and Mr. A. Gough, and microscopic slides by Dr. C. W. Vining, Dr. M. J. Stewart, and Dr. W. H. M. Telling.

DORSET COUNTY COUNCIL AND VENEREAL DISEASE.

—At the last quarterly meeting of the Dorset county council it was decided to establish treatment centres for venereal disease in six towns, and Mr. W. B. Cosens, with Dr. T. Howard, both of whom are magistrates, will assist the council in the scheme.

Reviews and Notices of Books.

Traitement des Fractures: Fractures Articulaires.

Par R. LERICHE, Professeur Agrégé à la Faculté de Médecine de Lyons. Avec 97 figures dans le texte. Paris: Masson et Cie. 1916. Pp. 190.

IT is a curious fact that before the war more German text-books in medicine and the allied sciences were read in this country than books written in French, though it is certain that many more medical men in the British Isles can read French than German. It is difficult to explain this fact. It is not through any lack of French medical literature, for the French press is prolific in medical works. Perhaps the explanation is to be found in the idea that the profession in Germany was more thorough in its methods than in any other country. Be this as it may, the advent of the war has directed the attention of British medical men to the medical literature written in the French language; and the interest felt in French works on medicine and surgery is increased by the fact that the war has given rise to no small number of books on matters directly connected with the war. Among these new books are some composing a series of war-books of which we have a specimen before us, written by a surgeon well versed in the matter which he discusses. He has spent no space on mere theoretical discussions, but has gone straight to the point, and has described his own methods of practice based on his own experience, and thus we have a much more valuable and interesting work than if we had merely a résumé of current opinions.

Professor Leriche deals with fractures involving joints under two sections—the first comprising the general principles and the second describing the treatment of fractures involving special joints. In connexion with the recent discussion in this country on the relative merits of a number of antiseptics in the treatment of wounds received in war, it is of interest to note that Professor Leriche does not approve of the use of any antiseptic whatever, but he puts the greatest stress on laying the wound completely open, even to its uttermost recesses, and this, in his opinion, is the most efficacious method of overcoming the microbic infection of wounds. He also values greatly the exposure of wounds to the sunshine, for he has found that the sun has a very definite action on the healing of wounds and that also it preserves the tonicity of the muscles, so that when the time comes for them to act again they are in the best condition to resume their work. Unfortunately for the use of this treatment, sunshine is not so available as might be desired.

In the section dealing with the individual forms of fractures into joints we need say little more than that Professor Leriche has in the case of each joint described the anatomical types of the fracture involving it, the immediate treatment, the indications necessary for a good functional result, and the post-operative treatment. The book contains a large number of excellent illustrations, many of which are reproductions of skiagrams. It cannot fail to prove of great value to those who have to deal with the almost innumerable cases of fractures into joints encountered in the present war.

Food and the Principles of Dietetics.

By ROBERT HUTCHISON, M.D. Edin., F.R.C.P. Lond. With plates and diagrams. Fourth edition. London: Edward Arnold. 1916. Pp. 617. Price 16s. net.

THE real appreciation of this book is seen in the issue of a fourth edition since it was published in 1900. With a wide public it has been accepted as an authoritative work on general dietetics. It is eminently practical in character, and one of its especial features is the discussion of well-known foods and beverages, proprietary and otherwise. In many instances the author has supplied in regard to these his own analytical data, while he acknowledges much work on the analyses of foods and similar subjects which has been reported from time to time from THE LANCET Laboratory. The significance of chemical results receives adequate treatment; the author states that it is not entirely chemical composition that decides on actual assimilation and appropriation of the elements of food for the body's

needs, while he points out that we often pay a fabulous price for the mere æsthetic qualities of food. He has added in the new edition a chapter on the vitamins, the presence of which in certain foods may, he admits, have to modify our views as to their dietetic merits. This subject is necessarily a difficult one to discuss in all its aspects at the present moment, and in some places the teaching may appear to have fallen behind, and in a few cases some of the proprietary preparations dealt with are no longer extant.

The book continues to be one of the most useful sources of reference on food and dietetics, and the discussion of principles is thoroughly sound. We are glad to note that some errors in the index of the previous edition have been rectified.

New Inventions.

AN IMPROVED GAG.

THE accompanying illustrations represent a gag (Fig. 1) which I have found invaluable in treating the varying degrees of trismus so commonly met with in neglected jaw injuries and gunshot wounds of the face, with consequent cicatrisation. The gag in the closed position (Fig. 2) is 5/16 in. high; as the majority of patients needing treatment can open their mouths to this extent in the incisor region the insertion of it presents no difficulty, and it is surprising how quickly full range of mandibular movement is acquired. I have found this gag absolutely indispensable in inserting the open-bite Gunning splint, the particular type of splint which I have employed with marked success in treating the severer cases of jaw injuries. Another advantage of this gag is that it can be easily manipulated by the patient and can be retained for two or more hours at a time, the range of movement being gradually increased by an occasional turn of the key.

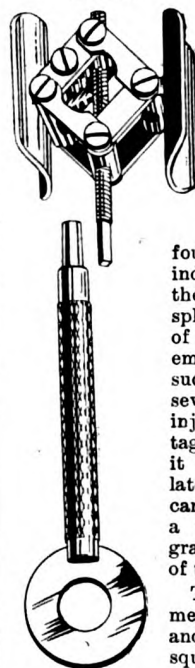


FIG. 1.



FIG. 2.

The instrument has been made for me by Messrs. Claudius Ash, Sons, and Co., Limited, Broad-street, Golden-square, London, W.

Burlington-gardens, W.

CHAS. H. BUBB, L.D.S. Eng.

AN IMPROVED ARTIFICIAL LEG.

WE have had exhibited to us an improved artificial leg which is made of leather, is therefore very light and has joints which work smoothly. Unlike the wooden bucket, the leather bucket, which is used in this instrument, can be easily made to fit the stump by simple lacing and is always under the control of the man who wears it and who, naturally, knows best what is most comfortable. In the "Ipswich leg" the upper bucket has a natural knee formation and works closely inside the top of the lower bucket, while the movement of the foot approximates very fairly to that in the natural limb. The action of the ankle-joint makes the mounting of stairs and curbs easy, and it is stated that even with amputation above the knee a cycle can be ridden with comfort. The leg is attached to the body by a special brace passing over both shoulders and equally dividing the weight. The weight of the instrument is 5½ to 7½ lb., and most of the repairs that are likely to be required can be executed by any saddler or cobbler. Mr. J. F. C. Hossack, F.R.C.S. Edin., writes that he has a favourable experience with this artificial leg.

The makers are Messrs. Griss and Smith, of 52 and 54, Fore-street, St. Clement's, Ipswich.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 18, 1916.

The Problem of the Disabled Soldier.

THE problem of the disabled soldier remains to a great extent undealt with, although we are aware that it is receiving the anxious attention of some of our best thinkers and organisers. In the debate in the House of Commons on Tuesday night, upon the introduction by Mr. ARTHUR HENDERSON of the Bill to establish a new Pensions Board, the magnitude of the difficulty was seen to be apparent to Members, and it must be earnestly hoped that no further delays in action will take place. Seven weeks ago we noticed a Memorandum dealing with the matter from the Committee of Reference of the English Royal Colleges; this stated that the medical aspects of the question were so important as to render advisable an immediate inquiry into the subject by experts, both civil and military. The Committee of Reference has worked in association with the Central Medical War Committee, and the Central Medical War Committee concluded some time ago that the matter was becoming urgent because the difficulties of dealing with disabled soldiers, bad enough at the moment, must grow more serious with the rapid and even daily increase of their numbers.

There are already at the lowest estimate 50,000 disabled soldiers discharged from the military hospitals as unfitted for further service, many of whom might have been enormously benefited by the continuance of such medical, surgical, and special attention as is received while remaining in the Army. The economical view under which they are now being discharged can only be justified if all that is possible is done for them, so that removal from the Army does not imply the reduction of them to civilian inutility. They would, of course, have been retained in the Army had it been considered possible to refit them for active service, but this event appearing to be out of the question, they were discharged. A certain proportion of them must in all circumstances prove unfit to conduct any business in civil life or to become wage-earners or independent citizens; but this proportion can be substantially diminished by the provision of treatment directed to their individual cases, particularly if this is made available for some considerable period. True national economy, just as much as special gratitude or common humanity, indicates that some such course should be pursued, and pursued quickly. A recent statement made by Mr. J. M. HOGGE, M.P., while emphasising the necessity which all recognise of making a quick start in the work, suggested that the Army should keep the men who

were injured or disabled until such time as they were fit to be discharged, one of his principal justifications for this course being the fact that the military hospitals have already absorbed so much of the medical skill of the country. The Committee of Reference of the English Royal Colleges have also pointed out that a large proportion of the specialists in the medical profession were holding commissions, so that while the disabled soldiers remained in a military hospital, depôt, or camp their condition could be supervised by those best qualified to secure satisfactory results, whereas on discharge their treatment was complicated by the absence from civilian duty of those whose advice would be naturally sought. In these circumstances, the great majority of the men being discharged into civil life, the National Health Insurance Commission becomes gravely concerned with the problem of the disabled soldier. When an insured person enlists he automatically comes off his panel, but on discharge from the Army he returns to the panel, and in the majority of cases will be restored to his former doctor's list. Abnormal work is thus thrown upon the panel practitioner, and there is as yet no systematic provision of consultants or specialists who can relieve him of any part of his responsibility or undertake duties which are without his province. These various aspects of the case are now under the consideration of the Secretary of State for War, who is in possession of the views of the Central Medical War Committee and of the War Pensions Statutory Committee on the subject, as well as of the valuable Memorandum of the Committee of Reference of the Royal Colleges. It is earnestly to be hoped that some general and generous plan of discharging the duty of the nation towards the disabled in the war will be set in motion.

The new Pensions Board, whose institution was made public in Parliament this week, has for its task the reconstruction of the administrative machinery for war pensions, and comes, therefore, into close contact with the problem of the disabled soldier. For the pension of the disabled soldier, however promptly handed out, cannot be expected to pay for a long course of special surgical or medical treatment. The defined object of the new Board is to perfect a pension scheme, and the War Pensions Statutory Committee will retain power to make provision for the care of disabled soldiers in respect of their health, after-care, training, and employment. Much of the admirable work which has been carried on by the voluntary committees will therefore be continued. But the medical profession would like to know with some approach to certainty what is the intended procedure. The terms of panel practice were not devised to cover the cases of disabled soldiers; yet the best that can be done for these brave men must be done. If their care falls upon the panel practitioner the best adjuncts to treatment will have to be found, whether we mean here the service of specialists, the provision of institutions, or the discipline which authority gives and under which systematic therapeutics thrive. There must be some men discharged into civil life, but from now on, it seems to us, a different policy should be pursued, and the majority of our disabled soldiers

should be retained with the Army until they are in great measure fit to conduct the battle of civil life. This is the strong feeling of an influential section of the public. Military administration naturally recognises the difficulties of this course, and we should be blind not to do so also. But in Sir ALFRED KEOGH we possess an extraordinarily sympathetic as well as able Director of the Army Medical Service, so that we can feel assured that the cause of the disabled soldier will be treated as a matter of the gravest national importance. Prompt action before the present situation becomes hopelessly aggravated ought to follow upon the deliberation of well-informed persons, commonly inspired with a desire to do their best to restore our disabled men to the highest possible grade of health and earning power.

Pain and Muscular Action.

THE problem of the nature and meaning of pain is as old as the hills. Words expressing pain are found in all languages, and in languages having a common origin the word for pain is etymologically the same. No satisfactory definition of pain has ever been given: the metaphysical interpretations of other days have now only a historical interest, while more modern views are not always free of the implication that they are definitions which do not define. In fact, a body of thoughtful opinion now supports the contention that there is no such thing as a pain-sensation—i.e., that pains (and pleasures, too, for that matter) are not sensations on the same level as, say, sensations of touch. It is held that pain is an affective element accompanying sensation, and depending on its quality, its intensity, and its duration, for the particular effect which it produces in consciousness. The pain of a cut or burn, for instance, it is said, can be analysed into a tactile or a temperature sensation on the one hand, and a feeling of displeasure on the other. Were pain a sensation in the accepted sense, it would be difficult to explain how a sensation originally unpleasant may lose its unpleasant character by repetition, or even, eventually, become pleasant, as in the case of "acquired tastes." Pleasures and pains are mental facts accompanying simple sensations, and are the expression of different physiological effects produced or aroused by the stimulus. This is equally true at higher levels of mental life; the "pain" of a blow on the shin and the "pain" of a bereavement differ in mental quality. It may be replied with truth, no doubt, that the question of specific pain-sensations is largely one, not of psychological, but of physiological and pathological evidence, and that the apparently clear separation, in the skin, of pain from other cutaneous sensations, and its apparently independent peripheral mechanism, militate against the hypothesis that pain is only a qualifying factor in sensation.

From quite another point of view pain has been regarded as "a beneficent reaction of the nervous system against threatening forces"; in its teleological aspect it is considered to be "a grouping of disagreeable stimulations for the purpose

of communicating the existence of an injury to consciousness." One of the most recent contributions to the problem of pain from the biological or evolutionary standpoint comes from the pen of Dr. GEORGE W. CRILE, of Cleveland, the high quality of whose original researches on shock and allied states has been widely acknowledged. Dr. CRILE has expressed his views in his book on "The Origin and Nature of the Emotions" and again in his more recently published work, "A Mechanistic View of War and Peace." According to this writer, pain is one of the phenomena which result from a stimulation to motor action, and he goes so far as to assert that "without some associated muscular action there is no pain." His general argument is that the phylogenetic purpose of pain is to bring about appropriate muscular action, whereby the injuring stimulus or stimuli are counteracted. Illustrative instances readily suggest themselves—a foreign body on the conjunctiva or cornea and the associated pain and reflex phenomena, the nausea that precedes vomiting, the pain of stepping with the bare foot on a sharp stone, the discomfort of bladder over-distension. Going somewhat further, Dr. CRILE next asserts that the exanthemata are painless and pyogenic infections painful because the protective response of the body to the former is mainly chemical, whereas in the case of the latter an attempt is made to prevent the spread of infection from the original focus by immobilisation of muscles whose contractions would serve to diffuse the infection—a protective muscular rigidity, which is painful. On the other hand, should the pyogenic infection be situated in organs or viscera in which muscular action can play no part in restricting it, such protective muscular action, and pain, do not occur. "This explains why tuberculosis of the hip is painful, while tuberculosis of the lung is painless." Only those parts of the body that have been exposed to injurious contacts with environment are supplied with pain receptors, hence many intracerebral pathological conditions are, according to Dr. CRILE, entirely painless. As, in this view, the emotions are as purely motor excitants as pain, it is supposed that there may be a conflict between physical and psychical stimuli for the possession of the "final common path," and the assertion is made that psychical stimuli occasion a more rapid release of energy; hence they obtain possession of the path, and pain cannot be felt until the emotional excitation dies away. In the fury of battle the soldier may not perceive the pain of a wound because emotion holds the final common path, so that muscular action is for the time being prevented.

Yet the soldier is far from being always in a state of emotional overaction when he happens to be wounded, so Dr. CRILE argues that should a high-velocity projectile pierce his body at such a time no pain is felt because "the high-speed bullet is a recent development," and the "sense organs have not become adapted" to its stimuli, hence they cannot react. As a fact, however, a number of cases of instantaneous pain, in a limb, say, from injuries by rifle or machine-gun bullets have occurred in the

war, where the pain has been agonising and continuous, and where irritation of a mixed or sensory nerve has been the cause. No muscular action, by immobilisation or the reverse, makes any difference to the pain, nor does the pain lead to any particular muscular action. Again, certain pathological intracerebral conditions, in particular lesions of the optic thalamus, are not infrequently associated with unbearable pains, referred to the contralateral limbs, trunk, or face, yet the optic thalamus has never, phylogenetically, been exposed to "injurious contacts with environment." Dr. CRILE further asserts that if the kinetic system is so completely exhausted that no more muscular action can be excited pain is impossible. That pain exhausts the sufferer, and that with absolute exhaustion sometimes comes relief, is of course a truism; but another interpretation is surely valid—viz., that it is the exhaustion of the afferent, not the efferent, mechanism or linked neuronic systems from over-stimulation which leads to the cessation of the pain, as too bright a light blinds, too loud a sound deafens. Dr. CRILE's generalisations are very suggestive, and a perusal of his two works above mentioned, as well as of a third, "The Kinetic Drive," cannot fail to interest the reader. If we are not inclined to subscribe to all his contentions, we are grateful to him for his persistent efforts to seek an adequate physical basis for phenomena whose investigation used to be left too often to the metaphysician.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS.

THE following additional subscriptions to the Fund have been received:—

| | £ | s. | d. |
|---|-----|----|----|
| Dr. G. D. H. Carpenter (16th and 17th donations—total, £17) | 2 | 0 | 0 |
| New South Wales B.M.A. (per Dr. Crago, honorary treasurer) (total, £226 19s.). Queensland Branch ... | 34 | 16 | 0 |
| Fund initiated by Otago Division of New Zealand Branch of B.M.A. (second donation—total, £1012 15s. 2d.).—Medical Men in Otago chiefly, but many from other parts of New Zealand; Pharmacists of Otago and South Canterbury; Nurses in Otago; Otago Catholic Association and General Public ... | 407 | 15 | 2 |

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

THE APPEAL FOR SURGICAL INSTRUMENTS.

Surgical instruments should be sent to the Master of the Society of Apothecaries, Apothecaries' Hall, Blackfriars, E.C.

ACUTE ANTERIOR POLIOMYELITIS IN IRELAND.—Unfortunately, cases of acute anterior poliomyelitis, at least 60 to 70, have occurred recently in different districts of Ireland. It is known that 9 cases have been diagnosed in and about Ballieborough (co. Cavan), 3 or 4 in Carrickmacross (co. Monaghan), 3 in Newry, 12 about Castlereagh (co. Roscommon); 7 cases have been notified in Belfast, and 6 are now in Purdysburn Fever Hospital, while cases have also been met with in Holywood, Ballymena (co. Antrim), and in Markethill (co. Armagh), as well as in other districts. One of the characteristics of several of the cases has been the rather late appearance of paralysis, which has occurred a week after the onset of the feverish attack, naturally leading at times to a deferred recognition of this serious disease. Apparently, treatment has not had much effect.

Annotations.

"Ne quid nimis."

WOMEN AND THE LAND.

BEFORE the war the employment of women as workers on the land had become so much less usual than it was two or three generations ago, or had so completely ceased, that the present demand for their services found few able to respond to it. The women agricultural labourers in France and other continental countries continued and added to their daily toil on farms; our women were not ready to do likewise in any large numbers. Those whose grandmothers used to labour in our fields thought farm work "lowering," or regarded it as over-arduous, and, moreover, had acquired no training or experience to fit them for it. In these circumstances the sudden and urgent demand produced a supply of unsuitable persons from towns and villages, for the Women's Farm and Garden Union was practically the only existing institution which had interested itself in women's work on the land in time of peace and did not possess the means to meet a large demand. But a Women's National Land Service Corps, a war offshoot of the above society, was started to deal with the problem of meeting the immediate needs of the farmers. We commend the study of this body's interim report (which is published at the headquarters of the National Land Service Corps, 50, Upper Baker-street, London, N.W.) to women with physical and mental health and strength, who are anxious to do work very important in character and most helpful to our military cause, and who are not "out for money." Women workers on the land and organisers of such work are not paid at the rates expected by munition workers, or by the more highly rated employees of the War Office and the Admiralty, and their life will not be as exciting as that of the motor-car drivers who face danger and hardship near the front, but, nevertheless, they will be doing patriotic work, the need for which can hardly be exaggerated. Much of the work on any farm is well within the physical capacity of women. Milking and most of the duties connected with the care of animals may be taken as examples. But it is not only on account of the direct usefulness of the physical work to be done that the Women's National Land Service Corps should appeal to women. It can, indeed, supply training for a short period to women which will send them to a farm not quite in the position of raw hands, and it will thus test the suitability of the work to their capacity and temperament. It has, however, also as its object the supply of women to country districts who, besides doing their task for the farmer employing them, will help in the recruiting of other women, in organising the labour of village women, and in encouraging them by example to come forward. It has among its stated aims the supplying of county committees with organisers and trained speakers. It will be interesting to see how far women who entered upon farm work to meet an emergency will devote themselves after the war to an industry to any large extent which for several generations has possessed no feminine appeal. They will have found, or probably will have been able to introduce, better conditions than those which prevailed in the "old days." They will also be qualified to express opinions in the future when

educational questions as affecting country districts are reopened and when measures are being discussed for ensuring the return to the land of a larger proportion of our population.

HEAT STROKE, AVOIDABLE AND UNAVOIDABLE.

THE tragedy in the troop train from Karachi to Simla in June last, which was described at the time in our columns, came up again recently at question time in the House of Commons when it was stated on behalf of Mr. Chamberlain that no report of the inquiry was to be published. The statement was made that the Government of India have now issued revised regulations regarding the despatch of troops by rail during the hot weather, which should prevent the recurrence of such a tragic incident. In the face of this reassuring statement we are in entire agreement as to the uselessness of publishing details and of pillorying individuals who are now keenly alive to the possible dangers. The reply of the Secretary for State closes a chapter in preventable heat stroke. The 130 cases of heat-stroke which occurred on the *Dongola* during her voyage with wounded men from Basra to Bombay are in a different category. Seventeen deaths attributable to heat stroke occurred among the invalids and crew, and five others in which death was probably accelerated by the heat. The voyage was carried out under excessively difficult climatic conditions. On account of a following wind it was necessary during the early part of the voyage to put the boat about every four hours in order to get air into the wards. Here there appears to have been neither negligence nor ignorance; all that could be done in the trying circumstances was done, and the most regrettable fatalities were due to the fortune of war, and could have been neither foreseen nor prevented.

TICKLING COUGH.

Mr. T. Mark Hovell, President this year of the Laryngological Section of the Royal Society of Medicine, dispensing with a set presidential address, directed his introductory remarks to the therapy of certain common and distressing conditions of the upper air-passages, and especially to the relief of pain and discomfort. He agreed with Sir Richard Quain in ridiculing the idea that diseases of the throat are mostly of local origin, instancing many which arise from conditions existing below the diaphragm. Functional aphonia, granular pharyngitis, nasal obstruction connected with gastrointestinal or uterine derangements, were instances of such association, and treatment must be directed accordingly. In regard to one especially distressing symptom Mr. Hovell was helpfully suggestive, and if he was right in his conjectures cases of tickling cough may frequently be relieved of their terrors. For this condition he describes a frequent cause and an efficient remedy. He says:—

The cases of tickling cough which not only are very common after influenza, but which may follow a simple cold or occur without known cause, are frequently due to enlargement of the lingual tonsil, the cough apparently being produced by the swollen tissue coming into contact with the epiglottis. A solution of chloride of zinc, 15 to 30 grains to the oz., with a trace of dilute hydrochloric acid to thoroughly dissolve the salt, is in many cases sufficient to remove the trouble, but I am indebted to Mr. Morley Agar for calling my attention to the best remedy for this condition—namely, trichloroacetic acid. A very small quantity of this drug only is required, and it is best applied on a wool-holder bent at a right angle, with only a very thin layer of wool attached to it, so as to ensure the quantity of acid being small. It is best applied with the aid of a mirror, so that it can be accurately placed on the

swollen tissue. Enlargement of the lingual tonsil as a source of throat irritation, as far as I am aware, is not universally recognised, for if this were so the cases of paroxysmal cough which are so frequently met with would not be allowed to continue as they do.

In support of his contention Mr. Hovell cites a striking case of a lady of mature age who had for fifteen years been subject to violent paroxysms of cough, both by day and night, which began to lessen after the first application of trichloroacetic acid, and became only occasional after continued treatment. Another case with a seven years' history of cough took a similar course. Mr. Hovell conjectures that the violent paroxysms of coughing in whooping-cough may also arise from enlargement of the lingual tonsil. In two patients in whom the cough was very persistent he found this to be the case, and appropriate treatment gave relief. He suggests to those who have to deal with whooping-cough a trial of this method, combined with the administration of garlic, which he is in the habit of applying by cutting the segments of the root into thin slices to be worn beneath the sole of the foot between two pairs of socks. Whooping-cough paroxysms do not readily yield to any remedy at present in use, and would therefore form a good test object for the value of these methods.

THE CLEAN WORKMAN.

If the war lasts long enough and the Munition Workers' Committee continue their beneficent labours, industrial hygiene will reach a stage of development which might have required half a century of torpid peace conditions. The condition of the workman engaged in dirty employment and obliged to return home in his state of acquired grime is one that has long attracted the attention of thoughtful people as likely to result in loss of self-respect as well as the more or less marked aversion of his fellow travellers; but apart from trades in which the dust or dirt is poisonous, where the Home Office has been obliged to step in, little has been done to remedy the evil. Memorandum No. 14 (Cd. 8387, price 1d.) now deals with the provision of washing and bathing facilities for controlled factories in a way which should help to bring a drastic improvement. The Memorandum incidentally mentions a continental factory where hot and cold shower baths are provided for operatives engaged at sweaty or dusty processes and of which such free use is made that the workmen leave the premises spick and span. Attention is very rightly called to the practical impossibility of anything in the nature of evening recreation for the worker who must travel home, often a considerable distance, to get cleaned up before he can return to the city with his family. The installation of simple and practical lavatories is described in some detail, the suggestions being in the main identical with the regulations of the Home Office Order for pottery workers. In addition to such ordinary washing accommodation the Memorandum recommends the provision of bathing facilities for workers exposed to great heat and excessive dust. The cheapest and most efficacious installation is that of shower or douche baths, which produce not only cleanliness, but also a useful and stimulating effect upon the skin, militating against the catching of cold on leaving the workshops. The Memorandum suggests that workers may with advantage be encouraged to participate in the management of bathing facilities, and may

prefer in some cases to take a share of the payment. In workshops where baths are of special benefit to health and efficiency they should be provided within working hours. We trust the recommendations may be studied by employers and employed engaged in all dirty occupation, and that a result of this study may lead to a higher standard of personal cleanliness in the industrial world which will benefit health and self-respect alike.

TUBERCULOSIS OF THE TONGUE.

THOUGH tuberculosis of the tongue was described, probably for the first time, in 1767 by Morgagni in his work on the Seats and Causes of Diseases it is, like tuberculosis of other muscular tissues, very rare. In the *American Journal of the Medical Sciences* for September Dr. James R. Scott, microscopist of the Army Medical Museum, has published an important paper on the subject. After a thorough search of the literature he has been able to find only 231 cases. He has reported a case in a soldier, aged 32 years, one of a family of five, of whom a brother and a sister died from pulmonary tuberculosis. The patient dated his trouble from four years ago, when he noticed a small elevated white area on the left border of the tongue. He went to hospital, where touching with tincture of iodine twice a week was recommended. On examination he was found to be well nourished and muscular. After coughing fine moist râles were heard over the apex of the left lung. The temperature was normal. The tongue was slightly enlarged and corrugated. An ulcer, which had increased slowly and was not painful, occupied the posterior two-thirds. The sputum contained tubercle bacilli. A portion of the ulcerated area was removed for microscopic examination. Beneath the area denuded of epithelium were young fibroplastic cells, with here and there giant cells surrounding a small area of necrosis. Deeper in the tongue were numerous tubercles separating the muscular elements. Sections stained by the Ziehl-Neelsen method showed numerous acid-fast bacilli, some within the giant cells. The patient was admitted to a military hospital, where the fact was established that there was tuberculosis of both lungs. It is noteworthy that during the four years of the lesion of the tongue the chest was examined for tuberculosis with negative result, for he had twice enlisted, the first time three years and the second a few weeks before he came under observation. Tuberculosis of the tongue has been observed at all periods of life, but is most common in the decade 40-50. It is usually secondary to pulmonary tuberculosis and the result of an injury which causes solution of continuity of the mucosa, allowing inoculation of the sputum. Primary tuberculosis of the tongue is much rarer. With regard to the symptoms, the most striking feature is the indolence of the condition. At the onset there is little enlargement of the tongue or pain. The ulcer extends slowly. With the progress of the disease the tongue becomes considerably swollen and covered with glairy greyish mucus. Soon pain appears. At first it is felt only on taking solid food, but later is so intense that mastication becomes impossible; still later a liquid diet and even phonation cause excruciating pain. The tuberculous lesion is generally localised near the tip of the tongue, but may occur on the border or on the upper or lower surface. As a rule it begins as a small, slightly elevated nodule covered by

normal mucosa. This rapidly breaks down in the centre to form an ulcer. The margin of the ulcer is generally abrupt and is frequently undermined. The surface is covered with sticky mucus. On removing this is revealed a grey or yellowish-red surface with hard round prominences suggesting granulation tissue. The treatment is difficult; the method most in favour is excision wide of the disease.

LACTIC BACTERIO-THERAPY IN MILITARY SURGERY.

IN the military hospital at Abano some interesting investigations of a preliminary character but which may lead to important results have been carried out by Captain Med. S. Patellani and Lieutenant Med. S. Colombino,¹ on the applicability of lactic acid fermentation to the treatment of wounds. From the outbreak of the war the laboratory for agrarian bacteriology at Crema supplied a reliable lactic ferment to several of the military hospitals, and Professor Ferrata had established the fact that by its use it was always possible to change the intestinal flora, substituting lactic bacilli for the pre-existing natural micro-organisms, and, further, that in acute intestinal affections, which are the true field of application of lactic bacterio-therapy in the digestive track, there was invariably a rapid fall of temperature and cure of the condition *pari passu* with the transformation of the intestinal flora. In applying these same means to the treatment of wounds it was at once found necessary to make a radical change of method. The bringing in contact with wounds of a culture-fluid of whey and peptone containing lactic ferments, in the hope that lactic fermentation would develop in such wounds, was found to be delusive and devoid of any definite results. In reality there are not present in a wound the conditions which render possible the development of a fermentation so delicate as that produced by lactic bacilli. Deficiency and fluctuation of the temperature would in themselves alone constitute a serious hindrance to the multiplication of the lactic bacilli, which need a constant temperature of 37°-38° C.; a rise of two or three degrees is sufficient to arrest the most promising fermentation. These difficulties could be overcome by using the culture-fluid already fermented, and a series of experiments were instituted to ascertain whether it were possible to keep muscular tissue from putrefaction by treating it in different ways with the products of lactic fermentation in a thermostat. It was proved that pieces of muscular tissue, when immersed for 30 minutes every 12 hours in whey and peptone previously fermented with lactic bacilli, remained entirely free from staphylococci. The process was then applied to wounds by baths, douches, and dressings, and it was found that it was possible to diminish rapidly the number of micro-organisms and at length to obtain an exudate free from them on direct microscopical examination. Further, the lactic bath or dressing had no deleterious action on the granulations, but, on the contrary, exerted a true cytophylactic action. In fact, wounds so treated became speedily free of necrotic parts, the granulations became active and the edges healthy, while cicatrisation was more rapid than that which took place with simple asepsis or the use of antiseptics. Similar experiments were repeated with the pieces of muscular

¹ Il Morgagni, Archivio No. 9, Sept. 30th, 1916. Milan: Via Ansonio 22.

tissue in the thermostat, using various antiseptics, such as tincture of iodine, peroxide solution, alcoholic and ethereal solution of iodoform, and Carrel's fluid. After the first 24 hours the tissues treated with the antiseptics were invaded by numerous micro-organisms, while those subjected to the lactic treatment were completely free from bacterial forms; they merely presented a growth of ordinary mycoderma, which always develops on a fluid containing lactic acid, forms similar to the saccharomycetes which, as is known, are harmless, having been used clinically against bacterial infections, especially intestinal. Finally it remained to be proved by what mechanism the lactic bath acted. Repeating the experiments with a solution of lactic acid of 1 per cent., being the same degree of acidity as the lactic bath, the presence of a vigorous growth of staphylococci showed that the efficacy of the lactic fluid used did not derive its antibacterial power solely from the lactic acid, but from this acid in conjunction with other substances elaborated by the bacillus which had grown in the culture-fluid. The problem deserves further study by all the chemical and biological means at our disposal. At present the research is essentially practical, and the experimenters have expressed their intention of formulating more precisely the indications for the use of this form of medication in the treatment of wounds.

THE FUTURE OF RADIOLOGY.

AN outspoken address was delivered from the chair of the Röntgen Society on Nov. 7th by the new President, Captain C. Thurstan Holland, R.A.M.C. (T.). He stated that during the war mistakes, sometimes grievous ones, in interpretation and localisation had occurred as a result of X ray work carried out by unskilled and untrained operators. The man in charge of the X ray department should be medically qualified, be well up in medical and surgical diseases, possess knowledge of certain special diseases also, and in addition should have a thorough understanding of physics, chemistry, and electricity, and be capable to some extent of helping as an electrical engineer. While lay assistants might be permitted to undertake the minor work of the department, they should not be allowed or expected to make a diagnosis from plates, or give opinions, or undertake the screening of deep parts, or regulate the X ray or electrical treatment of cases. Captain Holland expressed great dissatisfaction at the present position of radiology in this country. In small hospitals up and down the land he feared that many of the X ray installations, worked as they were frequently by untrained medical men or equally untrained non-medical persons, were of very varying value to the community, and that the good they did in some cases might be more than counterbalanced by errors. The time had come, he believed, to protest against the position, as electro-therapeutics were becoming more and more important in all directions. Radium treatment should not be detached from other methods of treatment, and the time for separate radium institutes where this was the one and only method of treatment had gone by. He pleaded for the proper recognition of radiology and electro-therapeutics, and the teaching of these subjects at the hospitals and universities. Captain Holland's view will receive endorsement from his colleagues, though now cannot be the time to devise further elaboration of the medical curriculum. It is true that in

America such teaching has already been organised, but for the present we can only look to courses of post-graduate study to supply our educational needs. When the close of the war allows the detailed consideration of the problems of medical education, we may be quite certain that Captain Holland's plea for adequate recognition in the curriculum of radiology and electro-therapeutics will receive earnest attention. X ray work has proved of such paramount importance that the teaching of it will not be shelved. The teachers of these subjects should have a recognised status, and here the start must come, as Captain Holland says, from some university.

GELATIN AS A NUTRIENT.

RECENT bio-chemical researches show that under certain conditions gelatin can replace the proteins for the purposes of nutrition. It was formerly held that gelatin was not capable of building tissues, and that in no sense could it be regarded as a true substitute for proteins. In a very interesting series of experiments conducted in the bio-chemical laboratory at Cambridge by Ginsaburo Totani, and reported in the October number of the *Bio-Chemical Journal*, some evidence is offered that the addition of the amino-acid tryptophane alone to the hydrolysis products obtained from pure gelatin made these efficient in maintaining the nutrition of animals. The addition of tyrosine did not give the same decided effect as tryptophane. The results, however, refer to the use of hydrolysed gelatin, for when intact gelatin was used, it was badly digested and absorbed, which explains the failure to obtain good results upon the addition of the missing amino-acids in previous experiments. With the addition of tryptophane to hydrolysed gelatin in the cases of four rats experimented upon, two were not only able to maintain their weight but also exhibited some growth. The general condition of these animals also remained satisfactory. The condition of the other two rats of this set was also, for a long time, much better than that of rats receiving no tryptophane. It is concluded, therefore, that rats can maintain themselves upon the hydrolysed products of gelatin when tryptophane alone is added. The amino-acids are rapidly assuming great importance in the problems of nutrition and their differentiation as to the individuals which help and which do not help assimilation is very remarkable.

THE Government have decided to appoint a Food Controller, and a form of "war bread" will be instituted.

WE regret to record the death of Mr. Robert L. Swan, sometime President of the Royal College of Surgeons of Ireland. An obituary notice will appear in a later issue.

AT the meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine on Friday, Nov. 24th, at 8.30 P.M., a discussion on Cerebro-spinal Fever will be held, opened by papers by Dr. W. H. Hamer and Captain M. Greenwood.

A DISCUSSION will be held at a meeting of the Harveian Society of London on Thursday, Nov. 23rd, on the Treatment of Fractures. The discussion will take place at the Stafford Rooms, Titchborne-street, Edgware-road, W., at 8.30 P.M., and will be opened by Mr. Robert Jones and continued by Mr. Jackson Clarke, Mr. T. H. Kellock, Mr. F. Romer, and Mr. Laming Evans.

MEMORANDUM ON TETANUS.

THE following notes on the prophylaxis and treatment of tetanus have been compiled with the authority of the War Office Committee for the study of tetanus, and are to a great extent based on experimental and clinical evidence which has become available since the beginning of the present war.

The Prophylactic or Preventive Treatment of Tetanus.

The prophylactic value of injections of antitetanic serum is beyond all question, but there is strong experimental evidence that in about ten days the immunity conferred by the primary injection is to a great extent lost. It is, therefore, the general opinion that a second subcutaneous injection should be given in all cases of septic wounds, and in order to anticipate the total disappearance of the antitoxin from the body, the second injection should follow the first at an interval of seven days.

In cases of long-continued septic wounds, particularly those caused by shell or bomb, third and fourth injections at seven-day intervals are recommended. It is self-evident that if it is considered necessary to give a second injection, then it is equally necessary to give a third or fourth or more prophylactic injections, as the passive immunity conferred by the antitetanic serum is of short duration.

It may be definitely stated here that the danger of anaphylactic shock is negligible when prophylactic doses of 500 U.S.A. units contained in 3 c.c. of horse serum are given subcutaneously, whatever the interval after the preceding injection.

Dosage in prophylactic or preventive treatment of tetanus.—The primary injection should consist of 500 U.S.A. units, and the second and following injections should be, for the present, of the same amount. The primary injection is given as a rule at a dressing station or field ambulance, as soon as the wounded soldier is removed from the firing line. The second and following injections will most frequently be given at home hospitals. The ordinary phial usually contains 1500 units of tetanus antitoxin. One-third of a phial should, therefore, be injected into each wounded man. There is no necessity to sterilise the syringe after each injection; the serum is aseptic and, moreover, contains an antiseptic; it will be sufficient if a freshly sterilised needle is used for each case.

Precautions to be taken before operating on wounds.—When operations are performed at the site of wounds, even if they are healed, a prophylactic injection of serum should invariably be given if the operation be performed at a greater interval than seven days from the last injection. Cases have occurred in which the performance of simple operations has been followed by an attack of tetanus, although in many cases the primary wound had been healed several weeks before the operation. This precautionary injection may consist of a single subcutaneous injection of the ordinary prophylactic dose of 500 units, given when possible two days before the operation. It is better to give it two days before the operation, as it takes some 48 hours for antitoxin to be fully absorbed after subcutaneous injection. Injected intramuscularly the absorption is quicker—said to be about 12 hours—so that this method could be used if time were pressing. Of course a larger dose than 500 units may be injected if thought advisable.

Antiseptics which may be of use in the preventive treatment of tetanus.—The group of oxidising antiseptics, such as hydrogen peroxide, potassium permanganate, chlorine water, and solution of iodine, are particularly unfavourable to the anaerobic growth of the tetanus bacillus. They have the power of rendering toxin non-toxic.

Diagnosis.

The classical symptoms of tetanus as described in the majority of the text-books refer to a phase of the disease when treatment has already lost much of its value. With many medical men tetanus is not tetanus until the symptoms of risus sardonicus and lockjaw are present. In those who have been protected by prophylactic injection of antitoxin trismus and general symptoms practically never occur, and the manifestations of tetanus are confined to local spastic rigidity of the wounded limb, which may persist for weeks.

The early diagnosis of tetanus is of the greatest importance. All clinical and experimental evidence tends to show that the chances of successful treatment diminish rapidly with the length of time after the first symptoms are observed. Tetanus toxin reaches the motor nerve cells by travelling up the nerves. It is not directly conveyed to the central nervous system by the blood. In a large number of cases the toxin appears to reach the spinal cord primarily by the nerves which are in connexion with the seat of the injury, and hence the motor nerve cells governing the muscles round about the wound will be the earliest affected, such affection showing itself in the form of spasticity and increased reflex

excitability of the muscles near the wound. In some cases these symptoms may precede other symptoms of tetanus by many hours. It is therefore desirable that the muscles in the vicinity of the wound should be examined whenever dressings are removed, and the occurrence of rigidity or twitchings or local increased reflex response to gentle tapping or pressure immediately reported to the surgeon in charge.

All nursing sisters engaged in dressing wounds should be warned to give the alarm if the muscles round the wound are harder or more rigid than the muscles of the uninjured limb or side. Other early symptoms of diagnostic importance may be anxious look, pain in back or neck, sore throat, general restlessness, unreasonable outbursts of temper, insomnia, violent headache, excessive yawning, complaints of spasm or stiffness in injured limb, stiff-neck or difficulty in swallowing without recognisable cause, stitch in side, profuse local or general sweats, and difficulty in micturition.

It is very desirable to obtain the co-operation of medical officers in the endeavour of the Committee to formulate the early symptomatology of this disease, and to confirm or add to the above. Any brief account of early symptoms noted both in the major and in the minor forms of the disease will be of great value, and officers are requested to forward any such observations to Surgeon-General Sir David Bruce, chairman of the Tetanus Committee, at the Royal Army Medical College, Grosvenor-road, London, S.W.

Therapeutic or Curative Treatment of Tetanus.

It cannot be too strongly emphasised that time is the all-important element in the treatment of tetanus. As short a time as possible should be allowed to elapse between the diagnosis and the commencement of active treatment. A delay of an hour may make all the difference between success and failure. It is on this account that the early symptoms are of the greatest importance. In almost every case of tetanus there are found local manifestations of the disease, very often hardness and rigidity of the muscles round the wound, and these signs can be seen or felt for days or even weeks before the occurrence of trismus. In a case on record these local symptoms had been present for three weeks before the trismus showed itself and before tetanus was suspected. One medical officer is reported to have said that symptoms of tetanus were present in a case, but were not sufficiently severe to justify the use of antitoxin. According to present ideas it should no longer be permissible to wait for the occurrence of lock-jaw before pronouncing the word tetanus; 5000 units of antitoxic serum are of more avail at the very beginning, when the disease is still localised, than 50,000 when the symptoms have become general. The moment, then, any local manifestation of tetanus is observed it is recommended to proceed at once to vigorous specific treatment.

The treatment of tetanus may be divided into specific and symptomatic:—

1. *Specific.*—Specific treatment consists in the giving of tetanus antitoxin, which has the power of rendering the tetanus toxin with which it comes in contact non-poisonous. From what has been said above about the injurious effect of delay it is obvious that it is necessary to give antitoxin by the method which enables it to produce its effect most quickly. Subcutaneous injections of serum are absorbed very slowly, 48 hours may elapse before a dose is fully absorbed; hence little can be expected from this method at the beginning of treatment.

Experimental and clinical evidence has shown that the best results are obtained by intrathecal injections of serum.¹ This direct attack on the toxin in the neighbourhood of the central nervous system should be supplemented by intramuscular injections in order to neutralise any toxin in the blood, and thus prevent any more of it being taken up by the nerve-endings in muscle. Absorption of antitoxin from muscle is rapid, reaching its maximum in about 12 hours. In addition to the intramuscular method, subcutaneous injection can be practised at any time, and is particularly useful in the later stages in keeping up the antitoxic quality of the blood. Absorption reaches a maximum in two or three days. It is recommended that intravenous injections should not be made as the risks of anaphylactic trouble occurring are greater when serum is given intravenously than when it is given by any other route.

Dosage in the therapeutic or curative treatment of tetanus.—When given curatively antitoxic serum must be administered in very large doses. In a case of tetanus the first thing to do is to give an intrathecal injection of antitoxin.

The amount of cerebro-spinal fluid which can be withdrawn will, as a rule, not be more than 20 c.c. It is usually held to be undesirable to run in more serum than will replace the cerebro-spinal fluid drawn off, and in the cases when little or no fluid can be withdrawn it is not wise to inject more than 20 c.c. of serum and this very very slowly.

¹ A description of the method of performing an intrathecal injection is given as an appendix.

* If the serum used be of the ordinary strength of 150 units in 1 c.c., the patient will then receive a dose of some 3000 in 20 c.c. If the serum be of higher potency, say 800 units to the c.c., the patient will then have received 16,000 units. For intrathecal injections this high potency serum, if procurable, should by all means be used. At the same time 5000 to 10,000 units should be injected intramuscularly, and 3000 to 5000 may also be given subcutaneously. The intrathecal injections may be repeated daily for three to five days, when they should as a rule be discontinued. The intramuscular and subcutaneous injections may be continued daily or oftener, according to the severity of the symptoms. When the disease shows distinct signs of abating the size of the dose may be gradually decreased, the interval between the doses lengthened, and the serum given only subcutaneously.

The following may be given as an example of the serum treatment which has been successfully employed in early, but well-marked, tetanus:—

| Day. | Subcutaneous. | Intramuscular. | Intrathecal. |
|------------|---------------|----------------|--------------|
| 1st day... | — | 8,000 | 16,000 |
| 2nd day | — | 8,000 | 16,000 |
| 3rd day | — | 4,000 | 8,000 |
| 4th day | — | 4,000 | 8,000 |
| 5th day | 2,000 | — | — |
| 7th day | 2,000 | — | — |
| 9th day | 2,000 | — | — |

2. *Symptomatic.*—Symptomatic treatment consists in the exhibition of sedative drugs. Perhaps the most suitable is morphia in $\frac{1}{4}$ grain doses and administered every four hours; potassium bromide, chloral, chloroform, paraldehyde, are also given by the mouth or rectum. Carbolic acid: There is no convincing evidence that the carbolic acid treatment of tetanus has any curative effect whatever, or any action upon the course of the disease. Magnesium sulphate: Treatment by sulphate of magnesium has no effect upon the disease itself. The cessation of spasm which follows an injection is only temporary, and is purchased at the cost of risks which are far from negligible. It is very doubtful if any real advantage is gained by its use.

Surgical treatment of the wound.—There is a general impression that it is of advantage to excise the wound, or amputate the limb in cases of tetanus. The matter is one upon which there is considerable difference of opinion. From the clinical experience of many observers it would seem that these procedures are of little avail and may actually accelerate the course of the disease. Animal experiment, so far as it goes, also suggests that operative measures are useless. While more evidence is required before any dogmatic statement can be made, it appears safer to abstain from surgical interference with the wound until the ordinary treatment for tetanus has been carried out, unless there exist other and imperative reasons for immediate operation. The irrigation of the wound with oxidising agents, such as hydrogen peroxide, when this can be done without undue disturbance and without opening up the wound, is to be recommended.

Reporting and care of cases.—In every Command one or more officers with special knowledge should be detailed by the D.D.M.S. to visit and assist in treatment of cases of tetanus. These officers should be at the general hospitals of the district, and their names and telephonic addresses should be communicated to the officers and medical practitioners in charge of subsidiary and V.A.D. hospitals. On occurrence of a case of tetanus the appointed officer will be immediately informed, and he will at once proceed to visit the case and offer assistance in the carrying out of such treatment as has been suggested in the present memorandum. He will if necessary assist in the operation of lumbar puncture and intrathecal injection. This will seldom be necessary, as from what has already been said as to the danger of even an hour's delay this intrathecal injection will usually have been done before his arrival, unless the distance to be travelled is short. He will make careful inquiry into the case in order to ascertain if any early symptoms had been present and had escaped notice. He will note what prophylactic injections have been made, and if omitted, why they were omitted. When visiting the hospital where the case has occurred he will ascertain if the other wounded men are receiving prophylactic injections. He should see that sufficient notes of the case are being kept in order that the tetanus form can be filled up as fully as possible. For example, it is very seldom that the distinguishing marks on the bottles of serum are reported. If serum trouble arises it is evident that this information would be useful. He will forward an inspector's report to Surgeon-General Sir David Bruce, with as little delay as possible. The ordinary tetanus report will be filled in by the medical officer in charge of the case.

Officers in charge of hospitals will be responsible for the administration of the second and following prophylactic doses of antitoxin to all wounded under their care, unless reasons exist for withholding them. The administration of

antitoxin will be recorded on the case sheet. They will also as heretofore inform Surgeon-General Sir David Bruce, by telegram, of the occurrence of a case of tetanus, and on the death or recovery of the case forward the usual tetanus report in accordance with War Office instructions. Any abnormalities of behaviour of antitetanic serum should be carefully noted and reported.

As the Tetanus Committee was appointed for the purpose of studying tetanus, it is greatly to be desired that every medical officer will coöperate in a collective investigation, and submit any evidence in his possession which may add to our knowledge of the disease and its treatment.

APPENDIX.

The method of performing an intrathecal injection.—The patient should preferably be under general anaesthesia, but the operation can be performed with local anaesthesia. The skin over the area of the fourth and fifth lumbar spines should be painted with iodine or cleansed with soap and water followed by an antiseptic. A spinal needle and 20 c.c. syringe should be boiled in normal saline, and the surgeon must observe throughout the most rigorous aseptic precautions. The patient is bent head to knees, so as to present as fully a curved back to the operator as possible, and the position of the fourth lumbar spine ascertained by drawing an imaginary line between the crests of the ilia. The tip of the finger is placed on the supraspinous ligament connecting the summits of the spinous processes of the fourth and fifth lumbar vertebrae. The needle is inserted about three-eighths of an inch to one side of the middle line, and directed forwards and slightly upwards and inwards. If the needle strikes the bone it should be withdrawn and a fresh attempt made. The canal is reached at a depth on an average of about 2½ inches. The trocar is withdrawn and about 20 c.c. of cerebro-spinal fluid allowed to flow out into a measured vessel. The syringe is then fitted to the needle and the serum injected. It is important that the serum be heated to the temperature of the body and the injection made very slowly. The canal can also be reached by pushing the needle through the supraspinous ligament in the middle line half-way between the two spinous processes. If several injections have to be made it is well to choose fresh sites. Blocking of the flow of the cerebro-spinal fluid by a blood clot may be overcome by reinserting and withdrawing the trocar. The bed should be tilted at the foot and the pillow removed for an hour or two after the injections.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

King Manuel's Visit to Military Hospitals.

King Manuel of Portugal brought his recent tour of military hospitals to a close with a visit to the Edinburgh War Hospital at Bangour. The King was accompanied throughout his tour by Colonel Robert Jones, Director of Military Orthopaedics, and by Major H. J. Stiles, Assistant Director for Scotland, representing the Red Cross Society. Colonel Jones stated that fully 70 per cent. of the injuries incurred in the war required orthopaedic treatment, and the provision of equipment for this purpose was therefore one of the most pressing needs of the time. He described the electro-therapeutic department carried on by Mr. Thomas Rankine as one of the best in the country. King Manuel spoke of the need for curative workshops such as those installed at Hammersmith, and stated that if the Red Cross Society supplied the workshops and their equipment in the various orthopaedic hospitals the War Office would guarantee to keep them up.

Scottish Association of Insurance Committees: Annual Conference.

At the recent annual conference of the Scottish Association of Insurance Committees held in Aberdeen a resolution to the following effect was submitted from the National Association of Insurance Committees:—

That the Association welcome the proposal that discharged soldiers should be provided with medical benefit, to include specialist and consultative treatment, and that they are satisfied that Insurance Committees will gladly welcome the proposal that they should carry through these arrangements.

After discussion, in which the extra work involved in carrying out the resolution was described as imposing an impossible burden upon the Insurance Societies, it was agreed to remit the matter to the Executive Committee with power to take any action it might see fit. Dr. J. C. McVail, Vice-Chairman of the Scottish Insurance Commissioners, delivered an address, in which he advocated a closer coöperation between the public health authorities and the Insurance Committees in regard to sanatorium benefit. Domiciliary treatment was, he said, at a disadvantage in the usual two-roomed house of Scotland compared with the roomier houses in England. In Scotland, too, there was a tendency to live in the kitchen; the

Scotsman must be educated to use his house for after-care. A great difficulty in the carrying out of the Edinburgh scheme for the employment of arrested tuberculous cases in out-door work had been the unreasoning fear of infection, not on the part of the employers, but of the employees. Dr. Matthew Hay, in the course of an address to the Conference, said that he was becoming more and more convinced that a single communal or State health and medical service would give the best results for the health of the community. They were, he said, rapidly drifting into a tangle of administrative difficulties, which a State service would at once unravel. The Insurance Act had already provided what was almost a State medical service for workers. The last Education Act enforced a medical service for school children. The Government, by a Treasury Grant, was asking for a similar service for infants and mothers, and was almost at the same moment compelling arrangements for the treatment at the public expense of all sufferers from venereal diseases. The local authority was taking an ever-growing part in the treatment, as well as the control, of infectious diseases. The Poor-law authorities had long provided for the treatment of the poor, and the Factory Acts were dealing more and more with the health of factory workers, and especially with occupational diseases. The pressing need was now, in his opinion, of a system under which all these services, with those of the medical institutions of all kinds, could be co-ordinated without overlapping, and therefore with economy and efficiency. Such a unified service could take a larger and more effective part in preventive medicine. In his opinion it would come.

Dundee Dental Hospital.

The third annual meeting of the Dundee Dental Hospital was recently held. The report recorded the establishment during the year of a dental school in Dundee and the granting of a dental diploma by the University of St. Andrews. Lectures from the honorary dental staff had been appointed, and Dundee was now as well equipped in the matter of dental training as any of the other large cities in the kingdom. The hospital had continued during the year to be of much use to the military authorities, and in all 2011 soldiers and 770 civilian patients had been treated. The revenue for the year was £140 5s. 11d. and expenditure £138 9s. 7d. Efforts had been made to enlist the sympathy of employers, and in one case a firm had subscribed £20 to be spent in dental aid to their employees. Cards and pamphlets had also been distributed, dealing with the importance of the general care of the teeth, among the military stationed in the district, and also among the mills, factories, and missions of the city.

Edinburgh Sphagnum Moss Depôts.

Surgeon-General J. C. Culling, D.D.M.S., Scottish Command, recently paid a visit of inspection to the depôts in Edinburgh dealing with the supply of sphagnum moss for the treatment of the wounded. Accompanied by Colonel Cathcart and Sir John Cowan he visited in succession the works at Albion-road, where the processes of drying, picking, sublimating and preparation for pressing are carried on, the storerooms in Queensferry-street, and the workrooms at 37, Palmerston-place. In a short address to the officials and workers General Culling said that the work which was being done in connexion with these dressings was fully appreciated by the medical branch of the War Office. The value of sphagnum moss as a dressing for septic wounds was becoming widely recognised and he was doing his utmost to introduce it into all the military hospitals of Scotland.

Nov. 14th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

A Deadly Microbe.

Professor Laveran brought before the Academy of Sciences a research on the etiology of gas gangrene conducted by MM. Weinberg and Séguin in the Institut Pasteur. This complication, one of the gravest which can occur in gunshot wounds, is caused by the development in the wounds of several anaerobic microbes. The authors now describe a very curious and very dangerous bacillus in the wound flora. This microbe possesses the property of rapidly destroying the tissues, and MM. Weinberg and Séguin have given it the name of the histolytic bacillus. If a culture of this

organism is inoculated into the thigh of a guinea-pig, at the end of some hours a progressive local liquefaction of the tissues is observed. The muscles of the thigh, their sheaths and vessels, even the skin itself, are digested and transformed into a blood-stained pulp, and there remains no more of the denuded limb than the bare skeleton on which the animal still bears its weight. The tibia is often spontaneously detached from the femur, the animal surviving 24 hours with this horrible mutilation. Dangerous in itself, this microbe is the more so in that it favours the appearance of gas gangrene. The anaerobes producing gas infection find an excellent culture-medium in the altered tissues digested by the histolytic bacillus. It is a frequent organism in wounds and must be combated. The authors are now engaged in preparing a serum against this new pathogenic microbe.

General Anæsthesia by Means of Intubation in Operations on the Head and Neck.

Dr. Guisez, surgeon in charge of the Oto-laryngological Centre of the 10th District, has brought before the Academy of Medicine a new method of general anæsthesia based on the fact that with the help of a special sound introduced through the mouth by direct laryngo-tracheoscopy it is possible to administer directly, through the trachea, an exactly adjusted mixture of air and chloroform. This proceeding, which Dr. Guisez has applied for many months on the patients of his centre, is of special service in all operations on the head and neck in which general anæsthesia is difficult to maintain throughout the operation. It has the advantage of shortening by one-half all operations on the mouth and pharynx, and of removing the anæsthetist from the field of operation as a possible source of infection; it permits of an exact plugging of the pharynx and of the mouth, rendering impossible the aspiration of blood and septic products into the air-passages, a frequent cause of broncho-pneumonia. In all the very bloody operations on the face, mouth, pharynx, and larynx the method can replace a preventive tracheotomy, and is devoid of the inconveniences of the latter.

To Raise the Arterial Pressure in Wounded Men.

Professor Charles Richet has just laid before the Academy of Sciences some recent experiences of great interest made by M. Townsend Porter on wounded men, in whom a marked lowering of arterial pressure was observed. When arterial pressure sinks to 50 mm., it does not rise again spontaneously, and special treatment is necessary without delay. M. Porter recommends three or four proceedings to raise the pressure. The first, which is the simplest, and which Professor Richet also recommends, consists in keeping the patient's head 5 or 6 cm. below the level of his body. The second is the injection of adrenalin. The third is the transfusion of blood. These methods are likely to be widely adopted, for the number of wounded with blood pressure reduced to 50 mm. is exceedingly great.

Inauguration of the Edith Cavell Hospital School.

A new hospital school has just been founded in Paris in the Rue Desnouettes in memory of the heroic Edith Cavell, and has been inaugurated under the presidency of the Under Secretary of State for Hygiene, M. Justin Godart. The ceremony was rendered impressive by the presence of many military and civil notables from all the Allied countries. M. Godart recalled in moving terms the memory of the heroic martyr and the aim of the new foundation which is designed to form a training school of professional nurses. The surgeon-in-chief is Professor Hartmann and the doctor in charge, Mme. Dr. Girard-Mangin, who since the beginning of the war has gained the title of médecin-aide-major, owing to her devotion to the wounded in the hospitals at the front.

Nov. 11th.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census 8050 births and 4415 deaths were registered during the week ended Saturday, Nov. 11th. The annual rate of mortality in these towns, which had been 11.8, 12.9, and 12.6 per 1000 in the three preceding weeks, rose in the week under notice to 13.3 per 1000 of their aggregate civil population estimated at 17,312,295 persons for the year 1915. During the first six weeks of the current quarter the mean annual death-rate in these towns

averaged 12.6, against 12.4 per 1000 in London. Among the several towns the death-rate last week ranged from 6.6 in Reading, 6.8 in Enfield, 6.9 in Coventry, 7.9 in Ealing, and 8.2 in Hornsey, to 18.0 in South Shields, 18.8 in Exeter, 19.5 in Grimsby, 21.1 in Gateshead, 21.5 in Dewsbury, and 23.0 in Hastings.

The 4415 deaths from all causes were 233 above the number in the previous week, and included 250 which were referred to the principal epidemic diseases, against 316 and 229 in the two preceding weeks. Of these 250 deaths, 127 resulted from infantile diarrhoeal diseases, 60 from diphtheria, 26 from measles, 17 from whooping-cough, 11 from enteric fever, and 9 from scarlet fever, but not one from small-pox. The annual death-rate from these diseases was equal to 0.8, against 0.7 per 1000 in the previous week. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had steadily declined from 477 to 131 in the eight preceding weeks, further fell to 127, and included 40 in London, 11 in Liverpool, 8 in Birmingham, and 5 each in Manchester and Salford. The deaths referred to diphtheria, which had been 40, 53, and 39 in the three preceding weeks, rose to 60, of which 15 were registered in London and 3 each in East Ham, Plymouth, Birmingham, Middlesbrough, and Newcastle-on-Tyne. The fatal cases of measles, which had been 17, 13, and 22 in the three preceding weeks, rose to 26, and included 8 in London, 4 in Birmingham, and 3 in Manchester. The deaths attributed to whooping-cough, which had been 10, 13, and 20 in the three preceding weeks, fell to 17, and included 2 each in London, Hull, and Rhondda. The deaths referred to enteric fever, which had been 11, 11, and 5 in the three preceding weeks, rose to 11, and included 2 each in London, Bolton, and Cardiff. The fatal cases of scarlet fever, which had been 7, 5, and 12 in the three preceding weeks, fell to 9, of which 2 occurred in Manchester.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 1067, 1130, and 1141 at the end of the three preceding weeks, further rose to 1171 on Saturday last; 157 new cases were admitted during the week, against 125, 197, and 146 in the three preceding weeks. The cases of diphtheria, which had increased from 1262 to 1528 in the eight preceding weeks, further rose to 1541; 202 new cases were admitted during the week, against 188, 231, and 186 in the three preceding weeks. These hospitals also contained on Saturday last 67 cases of measles, 45 of enteric fever, and 36 of whooping-cough, but not one of small-pox. The 1125 deaths from all causes in London were 73 in excess of the number in the previous week, and corresponded to an annual rate of 13.6 per 1000. The deaths referred to diseases of the respiratory system, which had been 132, 142, and 164 in the three preceding weeks, further rose to 201 in the week under notice.

Of the 4415 deaths from all causes in the 96 towns, 180 resulted from violence, 359 were the subject of coroners' inquests, and 1404 occurred in public institutions. The causes of 56, or 1.3 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, and in 69 other smaller towns. Of the 56 uncertified causes, 13 were registered in Birmingham, 11 in Liverpool, 4 in Gateshead, 3 each in West Bromwich and Sunderland, and 2 each in Ilford, Warrington, Manchester, South Shields, and Tynemouth.

HEALTH OF IRISH TOWNS.

In the registration area of Dublin 181 births and 162 deaths were registered during the week ended Saturday, Nov. 11th. The annual rate of mortality, which had been 17.5, 18.7, and 15.9 per 1000 in the three preceding weeks, rose to 21.3 in the week under notice, against 13.6 and 14.7 per 1000 in London and Glasgow respectively.

The 162 deaths from all causes included 29 of infants under 1 year and 53 of persons aged 65 years and upwards. Six deaths (of infants under 2 years) were referred to diarrhoeal diseases and 2 to whooping-cough. The causes of 14 deaths were uncertified, and 1 other was the subject of a coroner's inquest, while 69, or 43 per cent., of the total deaths occurred in public institutions.

During the same period 181 births and 109 deaths were registered in the city of Belfast. The deaths corresponded to an annual rate of 14.6, or 1.3 per 1000 less than in the previous week, and included 21 of infants under 1 year and 22 of persons aged 65 years and upwards. Six deaths (of infants under 2 years) were referred to diarrhoeal diseases, and 1 each to measles and whooping-cough. The causes of 2 deaths were uncertified, 1 inquest was held, and 33 of the total deaths occurred in public institutions.

THE EDWARD HAIN COTTAGE HOSPITAL.—It has been decided to erect a cottage hospital at St. Ives (Cornwall) as a memorial to the late Captain E. Hain, who was killed at Gallipoli. The cost of the undertaking will be £3000.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be Deputy Surgeon-General: Fleet-Surgeon G. Trevor Collingwood, M.V.O.

Fleet-Surgeon J. McElwee is placed on the Retired List with the rank of Deputy Surgeon-General.

To be temporary Surgeons: R. M. Barrow, C. N. Carter, and D. L. Lees.

ARMY MEDICAL SERVICE.

Colonel S. Hickson, C.B., K.H.S., is retained on the Active List, under the provisions of Articles 120 and 522 Royal Warrant for Pay and Promotion and to be supernumerary.

ROYAL ARMY MEDICAL CORPS.

To be temporary Lieutenant-Colonel: C. L. Starr, C.A.M.C. To be temporary Majors: Captain C. Hunter, C.A.M.C., and R. Bibby.

Captain W. W. Waller has relinquished his commission on account of ill-health.

Temporary Captains relinquishing their commissions: B. A. West (on account of ill-health), M. Murphy, J. H. C. Green, D. Wainwright, J. A. Glover, J. Henderson, J. F. Herbert, C. R. Smith, F. E. Daunt, A. Gibson, and D. R. Mitchell (on account of ill-health).

Temporary Lieutenants to be temporary Captains:—E. Bromley, N. McGowan, R. H. Oliver, H. P. Helsham, T. J. Simpson, A. Darlow, H. C. Addison, J. C. Pountney, A. G. Bryce, C. H. H. Coetzee, J. W. B. Thornburn, C. L. S. James, E. Caudwell, H. Mitchell, C. A. Dottridge, R. S. Ellis, S. P. Moore, J. C. Mackwood, J. J. Reynolds, W. F. Moore, J. R. Tibbles, G. Morris, E. C. Girling, T. W. Sweetnam, J. D. Evans, F. Morris, A. Neilson, R. D. Attwood, R. L. Thornley, A. W. Frew, F. H. Bromhead, E. Boyers, H. A. L. Banham, A. W. Holthausen, C. S. Dodson, W. N. H. Bell, D. Sims, W. H. Welsh, H. T. Wilkins, W. Mercer, F. J. Clemenison, C. H. Graham, S. A. Forbes, H. A. Ash, A. B. Blomfield, T. F. Lumb, E. J. Primrose, A. H. Spicer, H. Spong, M. McNiff, V. M. Coates, C. A. R. Gately, R. B. Lothian, G. S. Murray, K. N. MacLean, A. C. E. Gray, R. P. N. B. Bluet, E. O. Gilkes, A. B. Simpson, A. P. Gray, B. M. Bennett, A. W. Popert, W. MacDermott, A. R. Elliott, H. E. S. Stiven, J. G. Morrin, W. J. Olivey, R. Heaton, R. MacGill, R. H. Simpson, C. C. O'Kell, S. L. Hinde, R. Burges, D. H. Pennant, R. R. Elworthy, A. M. Kennedy, W. A. Higgins, G. T. Walker, J. P. McGreehin, D. J. Macdougall, J. H. Murray, R. K. H. Gillespie, A. Dick, H. L. McCormick, N. W. Gilchrist, C. R. Edwards, J. Rigby, K. McA. Ross, J. K. Muir, E. L. Ivens, A. J. Dunlop, E. M. Litchfield, P. M. Ragg, H. A. Forrester, A. E. F. F. Huntsman, T. G. Wakeling, A. Burns, and F. E. Marshall.

To be temporary Captains: H. Stokes, B. W. Housman, A. M. Fisher, C. Willoughby Anderson, C.A.M.C., and A. E. Giles.

Temporary Lieutenants relinquishing their commissions: R. Butterworth, T. B. Newman, C. H. F. Johnston, C. E. Durrant, C. M. Roberts, T. McC. Sellar, R. R. Kirwan, A. H. Manfield, W. G. McConnell, G. B. Wiswell, A. Wight, H. M. Hardy, W. S. Hart, D. T. Price, W. M. Christie, W. O'Donnell, A. Dixon, G. Henderson, F. J. Morrin, S. G. J. Dowling, R. D. Hodge, T. J. Lloyd, J. P. Scatchard, H. D. Wyatt, W. L. Scott, R. R. Kilpatrick, J. W. Mathie, W. R. Burton, J. F. W. Waters, and G. Blair.

To be temporary Lieutenants: F. A. Juler, W. A. Loxton, R. Semple, C. Watson, L. W. Davies, P. Maguire, A. McCredie, W. H. Kirk, A. J. Macleod, W. Laird, J. R. Fleming, A. L. Saunders, H. O'H. H. May, and M. J. Walsh.

Temporary Honorary Lieutenant A. B. Jones, having ceased to be employed with the Welsh Hospital, relinquishes his commission.

To be temporary Honorary Lieutenants: E. H. Durham, whilst employed with the Welsh Hospital, Netley, and W. H. Thomas, whilst serving with the British Red Cross Society in France.

SPECIAL RESERVE OF OFFICERS.

Lieutenants to be Captains: R. D. Lawrence and H. S. Evans.

Lieut. (on probation) J. A. C. Kidd is confirmed in his rank.

To be Lieutenants: O. C. L. Hughes; G. K. E. Inman, from Sheffield University Contingent, O.T.C.; A. B. Dummers and J. A. Hill, from University of London Contingent, O.T.C.; A. G. Anderson, E. Chapelle, F. J. C. Johnstone, J. Ratcliffe, and J. Sellar, from Edinburgh University Contingent, O.T.C.

TERRITORIAL FORCE.

Eastern Mounted Brigade Field Ambulance: Lieutenant P. J. Smyth to be Captain.

Attached to Units other than Medical Units.—Captains to be temporary Majors whilst commanding troops on hospital ships: D. Dickie and R. M. Wilson. To be Captains: Lieutenants F. N. Walsh and H. Jacques.

Correspondence.

"Audi alteram partem."

OUR DUTY.

To the Editor of THE LANCET.

SIR,—When on his return journey from the South Pole Captain Scott realised that his great adventure might terminate in disaster to himself and his comrades, his thoughts, as his diaries clearly show, turned not on himself and his own safety, but on what might happen to the wives and children if death overtook his party. In a letter to Sir J. M. Barrie he says: "I leave my wife and your godson, Wilson leaves a widow, and Edgar Evans a widow in humble circumstances. Do what you can to get their claims recognised." In a letter to Mr. J. F. Kinsey he says: "My thoughts are for my wife and boy; if I knew my wife and boy were in safe keeping, I should have little regret in leaving the world." The very last words he wrote were: "For God's sake look after our people." In the present war already many of the younger members of our profession have sacrificed their lives in the most heroic manner tending the wounded under heavy gun-fire. Who can doubt that in the period before a big engagement their thoughts have centred, not on themselves and their own safety, but rather on what might happen to their wives and children, if they fell?

Is it not a duty, an urgent duty, falling on all of us who are not called to serve in the danger zone to see that we spare no effort to safeguard the interest of those who fall? If we do our duty what a load of anxiety we shall remove from the minds of those of our profession who know that at any moment they may be called upon to face danger or death.

In the pages of your journal you have already announced the fact that a society has been started for the express purpose of assisting in the education and starting in life of orphans whose fathers have died in the present war without having had the opportunity of making provision for their families. The president of this society is Sir Alfred Keogh; it has a representative body of vice-presidents and a strong working committee. Many donations have already been received, varying in amount from 1 to 50 guineas, and annual subscriptions from 1 to 5 guineas. It is quite clear that a great deal of money will be required if adequate help is to be given, and especially valuable will be annual subscriptions. The secretary of the Auxiliary R.A.M.C. Fund, to give it its proper title, is Lieutenant-Colonel F. W. H. Davie-Harris, 124, Victoria-street, S.W., who is ready to give all information.

In conclusion, I would ask any member of the profession who reads this letter not to dismiss the points raised at once, but to ask himself whether the support of the fund does not make a strong appeal to him as a personal duty in the great struggle in which we are all engaged, a duty the fulfilment of which should give him much satisfaction in the thought that although he himself is not called to enter the danger zone, he may, by some personal sacrifice of his own comfort, contribute in removing a great anxiety from those of his younger brethren who may be called upon to make the supreme sacrifice of their lives.

I am, Sir, yours faithfully,

Oxford, Nov. 13th, 1916.

WM. COLLIER.

LOCAL TETANUS.

To the Editor of THE LANCET.

SIR,—Since my attention was called to this subject by Colonel Rudolf I have seen in consultation nine cases of the so-called local tetanus—three at the Canadian Hospital, Taplow, with Colonel Mewburn; three at the Base Hospital, Oxford, with Major Hurst; one at the Beechborough Park Hospital, with Dr. Clarke and Dr. Tisdale; one at Sheffield, with Major Mouat; and one at Milton Hill, with Dr. Turner. They fall into three groups: 1. Local spasm of a limb preceding for several days the onset of severe general tetanus, as in Dr. Turner's case, which recovered. 2. True localised tetanus, confined to one limb, or to a group of muscles, or to both legs, as in

Major Mouat's case, persisting for many weeks. Recovery is the rule. One of Major Hurst's patients died in a remarkable toxæmia without general spasms. I have neither seen nor heard of an instance of Rose's head tetanus, the only localised form generally recognised before the present war. 3. Pseudo-tetanus. Every muscle spasm following a wound is not tetanus. In Newcastle, Mr. Rutherford Morison mentioned a case of supposed local tetanus, but when I visited the ward the patient was out. The notes stated that the spasms in one leg began immediately after a scratch received from wire, and the description given by the nurse of the gait suggested a form of functional spasm. The patient at Beechborough Park had clonic spasm in one leg, varying with posture, and greatly intensified when watched. He was highly emotional, and after several weeks of observation Colonel Armour and Dr. Clarke came to the conclusion that it was a neurosis. Possibly, too, there are cases of the reflex spasm, associated with wounds, described by Babinski.

I am, Sir, yours faithfully,

Oxford, Nov. 12th, 1916.

WILLIAM OSLER.

THE USE OF A STANDARD AGGLUTINATION TECHNIQUE IN THE ARMY.

To the Editor of THE LANCET.

SIR,—Dr. P. N. Panton raises interesting points in his paper in THE LANCET of Oct. 28th on the inadvisability of universally employing Dreyer's standard agglutination technique. After a year's experience of it, may I be allowed to offer a few comments, without attempting to discuss all the points raised—no doubt they will be dealt with by Professor Dreyer or Dr. Ainley Walker. I disagree, however, in passing, with Dr. Panton's statement that it is "impossible to determine with scientific exactitude the number of bacteria present in a suspension." I believe it can be done with as much "exactitude" as the determination of the number of red cells in a drop of blood, if use is made of a counting chamber somewhat resembling the Thoma-Zeiss hæmocytometer chamber, but 0.02 mm. deep, also an optically plane cover-slip, a weak solution of carbol-thionin, and an oil-immersion lens.¹

Dr. Panton contends that Dreyer's method is cumbersome and inaccurate, and as equally good if not better methods are used by others, its "enforcement" as a standard is "naturally resisted." I do not think the method has been enforced, at any rate on civilian pathologists.

With regard to the alleged cumbersome nature of Dreyer's technique, I wish to allude to some of the ways we have saved time when using it on a large scale. Small zinc boxes were made which contain two of the racks supplied by the Research Committee; four of these boxes fit into the two compartments of a Hearson's paraffin oven, consequently one oven will admit of at least eight bloods being tested at the same time. We employ a large number of pipettes. At the end of the day they are all washed out with water, alcohol, and ether, and dried in a hot-air oven. Mr. R. Donald points out that the standard pipettes are not all the same size, and this introduces an error; but I think that in practice the error is less serious than he believes. Doubtless in future "standard" pipettes will be of a standard size; there is no real difficulty about that. If, however, the same pipette is used for each test, this source of error is removed. In our own work published before Donald's paper appeared, we usually employed only one pipette for each test, and held it at the same angle when distributing the drops.² If one pipette is used, then according to the printed directions, so Dr. Panton says, it must be washed out "six times with three different solutions, or 18 times altogether, for a single test against one bacillus." This must be a mistake for 18 times with three bacilli—i.e., typhoid, paratyphoid A, and paratyphoid B. If pure water is used instead of saline, and this is permitted by the directions, the frequent washing and drying is unnecessary. Our own procedure has been as follows, and though it differs slightly from the directions, I think it is sufficiently accurate and saves much time.

The six drops of serum to be tested are distributed from a clean and absolutely dry pipette. The surplus serum is then discharged and the pipette washed out three or four times

¹ See THE LANCET, April 11th, 1914.² Glynn, E. E., and Lowe, E. Cronin, THE LANCET, 1916, vol. ii., p. 222.

with the diluent, namely water, 54 drops of which are added to make the dilution of 1 in 10; there is no need to wash and dry the pipette first. The wet pipette is next used for distributing the water in the small dilution tubes. The surplus water is then blown out of the teat, and by shaking the pipette with the hand any drop on its end is removed. The wet pipette, which now contains inside and out about one-third of a drop of water—this I have ascertained by weighing—is rinsed out in the mixture of serum and water, which is then distributed with it into the small dilution tubes; the addition of a third of a drop of water to 60 is of no practical importance. The pipette is again washed out with water three or four times, emptied, and shaken as before, and then rinsed out in the bacillary emulsion, which is next distributed in the dilution tubes.

In order to save the time in counting the 15 drops of bacillary emulsion it is a very simple matter to calibrate the pipette to hold the right amount by marking the glass with a file. If care is taken to select pipettes which are all approximately the same size as measured by a gauge, then one calibrated pipette can always be used for the typhoid emulsion only, another for the paratyphoid A, and a third for the paratyphoid B. This saves still more time. In fact, instead of washing out the pipette with three different fluids and drying on six occasions "for a single test against one bacillus," it is then only necessary to wash the pipette three or four times with one fluid on one occasion to make a single test with three different emulsions, excluding the final washing and drying.

Dr. Pantón would not leave Dreyer's technique "in the hands of a laboratory attendant," for he is convinced "that it is a procedure which should never be advocated even for the most simple manoeuvres." Most people will cordially disagree. Dr. Pantón must have been singularly unfortunate in his trained laboratory attendants, for, of course, he is aware that every laboratory of any size makes use of them. The embedding and cutting of paraffin sections or the preparation of ordinary media are usually left to laboratory attendants; in carrying out this and other work they successfully practise manoeuvres which cannot be described as "most simple." One wonders who makes the 5 per cent. glycerine agar used by Dr. Pantón, and who standardises it.

One of the great advantages of Dreyer's technique is its simplicity; not only are the emulsions reliable, safe, and always ready for instant use, but any intelligent laboratory attendant who is careful and has a steady hand can learn to perform it satisfactorily in a very short time, especially if the reasons for the technique are properly explained to him. Of course, I do not advocate that the attendant should read the results, or interpret them.

With regard to the accuracy of Dreyer's method, personally I find that results obtained by the macroscopic technique are much easier to read than those obtained by the microscopic. In our opinion the method is most satisfactory and reliable; for example—

(a) We have isolated paratyphoid A or B 15 times from soldiers mostly convalescent, and on each occasion the blood has agglutinated the corresponding emulsion.

(b) Sixty-six consecutive convalescent cases of "enteric" had their agglutinins estimated to typhoid on four occasions at intervals of about a week. In 34 convalescents, or more than half, all four tests gave the same results and in 15 others three tests gave the same results.³

Dr. Pantón's objections to using Dreyer's method as a standard are very similar to those which would be urged by any manufacturer against the use of any given standard method, because it happened to be different from the one which he was employing. There is not sufficient "standardisation" of methods, apparatus, and parts in this country in spite of the efforts of the Engineering Standards Committee and other bodies. The British naturally object to standardisation because it interferes with their individual freedom. Personally I think the Research Committee in advocating the use of standard methods for agglutination tests have rendered a service to the Army. Until they were introduced military bacteriologists, often with little or no experience, were using different macroscopic and microscopic agglutination techniques, emulsions of different densities of sometimes dead and sometimes living organisms, derived from different strains of different inherent agglutinative capacity, cultivated on different media for different periods of time, perhaps at different temperatures. Last, but not least, they were using different

standards to mean a positive or a negative result. Had Dreyer's method been employed earlier in the war far fewer soldiers would have been invalided home from the East with a diagnosis of "typhoid." After all, standardisation is an essential part of all military organisation. Even if Dreyer's method is not absolutely the best, yet the advantages of using it as a standard method far outweigh any disadvantages; naturally, experts using other methods object.

Dr. Pantón suggests that a simpler plan than employing Dreyer's method would be to allow workers the choice of any recognised method and leave a "central committee" to convert their findings "into equivalent results." Surely, this is an impracticable suggestion in the middle of a great war, when bacteriologists are not available to personally investigate the various methods used and when we want to get results *now*, not after the war.

Dr. Pantón is unwilling to join in the "Hymn of Hate" which, he alleges, is *now* being directed at Dr. Tidy—his former collaborator in two papers—for making statements regarding the value of serum reactions in patients with fever, previously inoculated against typhoid. Dr. Donaldson and Miss Clark, Dr. Lowe and myself are among those who have *recently* "directed" criticisms at Dr. Tidy's statements, but we have not criticised him, and certainly have not been so rude as to sing hymns at him.

In conclusion, my remarks refer only to the use of typhoid and paratyphoid emulsions; I have had very little experience of the dysentery and Gaertner emulsions.

I am, Sir, yours faithfully,

ERNEST GLYNN,

Thompson Yates Laboratories, University Captain, R.A.M.C. (T.)
of Liverpool, Nov. 6th, 1916.

BRITISH SCIENCE GUILD.

To the Editor of THE LANCET.

SIR,—At a recent meeting of the Medical Committee of the British Science Guild I was desired to communicate with you upon the following points:—

1. A letter received from Sir Lauder Brunton shortly before his death. (I enclose copy.) With regard to paragraphs 11 to 14 inclusive, I am to say that the questions therein mentioned—the remuneration of the medical profession generally, the difference between the fees commanded by surgeons and doctors, &c.—are of particular interest to the Medical Committee of the Guild, who invite correspondence upon them through your columns if you are good enough to publish the letter or portions of it.

2. A letter from the Local Government Board, a copy of which I enclose. Some months ago the Medical Committee of the Guild were informed that there existed in certain Poor-law institutions in England and Wales an objectionable method of feeding a number of young children with the same spoon, a practice calculated greatly to spread infectious and contagious diseases. The committee communicated with the Local Government Board suggesting the appointment of voluntary lady inspectors who would visit the institutions and see the children fed. The Local Government Board, however, were unable to agree to this suggestion, but stated that the question would be brought to the notice of their ordinary inspectors. It has now been finally stated that the practice is not adopted in Poor-law institutions in England and Wales.

3. Feeding of boys at the public schools. A letter was recently received by the Medical Committee dealing with the following points: (a) That boys are sent to the public schools at the most critical period of their development, and it is therefore most important that they should have plenty of good and nourishing food. (b) That under the prevailing system the catering for each house is in the hands of the housemaster, who, to a great extent, makes his living out of the boarding fees. (c) That in the majority of cases the food provided is not of a sufficiently nourishing character, canned foods and twice-cooked meat figuring largely on the menus to the exclusion of fresh meat and vegetables.

The Medical Committee sent a copy of this letter to an eminent food expert, and his reply is as follows:—

With reference to your communication on the feeding of boys at the public schools, I think the facts as stated are true and call for correction. The system of housemasters living on the profits of their catering also seems to me to merit the condemnation passed upon it. The remedy for the evils enumerated is not, perhaps, to be obtained easily,

³ Glynn, E. E., and Lowe, E. Cronin, THE LANCET, 1916, vol. II., p. 222.

but it ought to be within the powers of the Medical Committee of the British Science Guild to lead public opinion on the matter.

The committee also sent a copy of the letter to the honorary secretary of the Incorporated Association of Headmasters, and his reply runs:—

I am much obliged for the letter enclosed. The difficulty is that schools vary very much; some of what is said would be quite unfair if applied to a good many. If the British Science Guild would produce some specimen dietaries—programmes for a month at a time, so as to show how a wholesome variety could be secured—I think it might be a very useful piece of work.

In the original letter received by the committee the suggestion is made that the catering at each public school should be taken out of the hands of the housemasters and put into the hands of an *ad hoc* committee. I am to state that the Medical Committee are in general agreement with the above proposal, and would be glad to receive correspondence on the subject.

I am, Sir, yours faithfully,

RONALD ROSS,
Chairman of the Medical Committee, for the
British Science Guild.

199, Piccadilly, London, W., Nov. 2nd, 1916.

[ENCLOSURE.]

(1) Extracts from a letter addressed by Sir Lauder Brunton to a correspondent on July 3rd.

11. The whole question of the remuneration of the medical profession and of its various branches will naturally give rise to much discussion.

12. For example, I have of late years frequently been consulted in regard to abdominal operations. The question shall an operation be performed or not? has been left entirely in my hands, and on the correctness of my answer the life of the patient has depended. Yet for my advice I received the fee of 3 guineas. If an operation was necessary the surgeon received 100 guineas.

13. This enormous disproportion between the values of mere mechanical skill and trained brain work holds in other branches also.

14. These high surgical fees are one of the causes why some kind of co-operative hospital is becoming urgently needed.

(2) Copy of letter from Local Government Board on feeding of infants in institutions:—

The Hon. Secretary, Medical Committee, 17th July, 1916.
British Science Guild.

SIR,—In reply to your letter of the 5th inst., I am directed by the President of the Local Government Board to state that the feeding of a number of children with the same spoon is not a practice adopted in Poor-law institutions in England and Wales.

I am, Sir, your obedient servant,
(Signed) H. W. S. FRANCIS.

THE DANGERS OF THE DIAGNOSTIC INJECTION OF TUBERCULIN.

To the Editor of THE LANCET.

SIR,—By their interesting note in THE LANCET of Oct. 28th on the Occasional Absence of a Rise of Temperature following the Administration of Diagnostic Doses of Tuberculin to Tuberculous Persons, Dr. D. Forbes and Dr. C. W. Hutt have, I hope, hammered another nail into the coffin of the diagnostic injection. Probably they would have found a febrile reaction had they measured the temperature in the rectum every two hours (the night included) during the first 30 hours. Occasionally a tuberculous patient's temperature may be normal or subnormal all day, and may become febrile only for a short time about midnight. But if we accept the writers' contention as proven, the diagnostic injection, which practically every sanatorium physician of experience regards as very dangerous, is convicted of being misleading also. I have known a hypodermic injection of a few drops of water provoke a typical tuberculin reaction; and if, on the other hand, a large dose of tuberculin occasionally provokes no febrile reaction in a tuberculous subject, why continue to play with this edged tool? It may, indeed, occasionally be necessary for the civilian practitioner to risk a diagnostic injection so as to convince the military authorities that a recruit is tuberculous. More's the pity, for there are plenty of cases on record in which rapid progress of the disease began directly after a diagnostic injection. The victim in such a case is surely entitled to feel almost as aggrieved as the mediæval ladies who established their innocence of witchcraft at the cost of drowning.

I am, Sir, yours faithfully,

Peppard Common, Nov. 9th, 1916. CLAUDE LILLINGSTON.

THE ETHICAL STANDARDS OF PANEL PRACTICE.

To the Editor of THE LANCET.

SIR,—When Dr. O. Eccles (in his letter in your issue of Nov. 4th) "presumes" that the word "panel" in my address to students refers to National Health Insurance practice, and that it "strongly suggests" that panel practitioners are tempted by the conditions of panel practice to dishonour their calling, he implies that there may be another interpretation of the term as used by me. Having been so far generous, he has no justification in reproving me severely. He proceeds to describe this interpretation of his as a "remark" of mine, and brands it as "offensive." I did not mention or refer to panel practice nor to panel practitioners, nor did I have them in my mind. The theme of the first part of my address was the motives that influence students and their parents in their selection of medicine as a calling. Incidentally I deprecated a fact, which cannot be denied, that in some instances their interest in the matter is what I called "purely commercial"—simply and solely to make a living out of it; and I hinted (I assure Dr. Eccles on good authority) that the panel as a public service has increased such instances. As for the term "commercial," it may not be appropriate nor happily chosen, and I regret that it has given offence, but surely it does not imply something dishonourable.—I am, Sir, yours faithfully,

Harley-street, W., Nov. 8th, 1916.

J. MITCHELL BRUCE.

THE DIFFERENTIATION OF HEART MURMURS IN SOLDIERS.

To the Editor of THE LANCET.

SIR,—I have read Professor D. Drummond's letter on this subject in your issue of Nov. 4th. I do not think the majority of heart-strain cases in soldiers have an apical murmur at all. It occurs to me that the type of murmur he describes seems what is generally called a "cardio-pulmonary murmur," due to the lung and not to the heart at all, and that accounts for his statement that when pressure is made by the stethoscope the murmur ceases, due, I think, to air being expelled from the subjacent lung.

I am, Sir, yours faithfully,

A. KINSEY-MORGAN, M.D. Durh., M.R.C.P. Edin.
Bournemouth, Nov. 9th, 1916.

THE QUEEN'S HOSPITAL FOR CHILDREN: NEED FOR CLINICAL ASSISTANTS.

To the Editor of THE LANCET.

SIR,—We shall be grateful if you will kindly draw attention to the need that exists at the Queen's Hospital for Children for additional assistance in seeing medical out-patient cases, the numbers of which have greatly increased since the commencement of the war. The committee would be prepared to appoint clinical assistants to sit with the physicians and would welcome inquiries on the subject from qualified men or women.

I may mention that we are now dealing with 2000 attendances of children per week.

I am, Sir, yours faithfully,

T. GLENTON KERR,
Secretary.

The Queen's Hospital for Children, Hackney-road,
Bethnal Green, E., Nov. 14th, 1916.

MASSAGE AND MEDICAL ELECTRICITY IN THE AFTER-TREATMENT OF CONVALESCENT SOLDIERS.

To the Editor of THE LANCET.

SIR,—May I be allowed to answer one or two points in Dr. W. Gordon's letter in your issue of Nov. 11th? Although my article was written in genuine admiration of the splendid work carried out in the Command Depôts by the medical officers in charge of the depôts, together with their staff, I am accused of suppressing certain facts as to their equipment in order to push what are described as "my own special views," whatever these may be. For instance, I do not

mention the diathermy at Ripon. The explanation is simple. There is no diathermy at Ripon.

With reference to my "truly extraordinary want of knowledge regarding the *eau courante*," I personally have always regarded it, together with all other forms of heat treatment, as an adjuvant to massage. It may, however, interest Dr. Gordon to know that Dr. Faidherbe, who is now in charge of the "Physiothérapie" at the Hôpital St. Maurice, and who was instrumental in installing the *eau courante* at the Grand Palais, informed me that he never used massage in conjunction with it, and that in his clinique it had almost entirely superseded massage. If there is anything in the value of training, then the assumption that better work is obtained from those who have had six months' training than from those who have trained for one month is surely justified.

As regards my ignorance of the Zander treatment I can only say that I attended Professor Zander's clinique when studying in Stockholm. Can Dr. Gordon claim to have done the same? I am, Sir, yours faithfully,

Cavendish-square, W., Nov. 13th, 1916. F. BARRIE LAMBERT.

ABORTION CAUSED BY A STRANGULATED FALLOPIAN TUBE IN A FEMORAL HERNIA.

To the Editor of THE LANCET.

SIR,—Mr. E. G. Renny's case published in THE LANCET of Oct. 21st on the rarity of the presence of the Fallopian tube in a femoral sac reminds me of a similar instance which came under my care in 1908. The patient, aged 36, who was pregnant four months and had come to Folkestone for a holiday, was seized with acute abdominal pain in the left lower abdomen whilst at an entertainment. The following day (August 18th) the pain continued and was referred to the left femoral region, where a swelling the size of a chestnut was detected. This swelling was painful to the touch on examination. The same day a blood-stained vaginal discharge appeared, which was the starting of a miscarriage. For a few days there was no evident change in the swelling in the left femoral region, but on August 24th there was marked increase both in the severity of the pain and also in size, which called for surgical interference. The operation revealed a femoral sac containing a deeply congested, almost black, Fallopian tube and its fimbriated extremity. This was excised. The following year the patient gave birth to a living child.

I am, Sir, yours faithfully,

Folkestone, Nov. 2nd, 1916.

JOSEPH E. G. CALVERLEY.

CHADWICK LECTURES ON CHILD WELFARE.—Dr. Charles Porter, medical officer of health for Marylebone, completed this week a series of three lectures at the Norwich Museum on matters relating to child welfare. In his first lecture he dealt with the antenatal care of the child, emphasising the importance of the health visitor in personal supervision of the expectant mother. An analysis of the causes leading to the death within a year of one-tenth of the infants born occupied the second lecture, and Dr. Porter ascribed to the hygienic and educational measures already applied a saving of 20,000 infant lives per annum. In the third lecture the mortality, amounting to over 60 per 1000, of children between their first and fifth birthdays was discussed; one-third of it at least, being due to infectious disease, was preventable, and the remainder, Dr. Porter felt sure, could be limited by a system of child consultations and home visiting of young children.

ROYAL DEVON AND EXETER HOSPITAL.—At a special meeting of the governors of this charity, which was recently held, Mr. C. E. Bell was appointed honorary consulting surgeon and also an honorary life member of the committee, in recognition of his long and valuable work in connexion with the hospital. Mr. Bell has been connected with the Royal Devon and Exeter Hospital for about 45 years.—The annual meeting of the governors of the West of England Eye Infirmary was held at the Royal Devon and Exeter Hospital on Nov. 3rd. The Eye Infirmary has been taken over as a military hospital, and the work of the institution is now being performed at the Royal Devon and Exeter Hospital. The medical report stated that 1700 patients were treated during the past 12 months; of these, 1314 were cured or benefited. The financial statement was satisfactory, and showed the income was £1714; the expenditure amounted to £1013. The late Mr. G. Mortimer, who has recently died, bequeathed £500 to the infirmary.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Died of Wounds.

Capt. H. Mathewson, R.A.M.C., attached Northampton Regiment, received his medical education at Queen's University, Belfast, and qualified in 1910. After holding the appointments of senior assistant medical officer of the Portsmouth Infirmary and of resident medical officer of the Norwich Workhouse and Infirmary, he returned to Ireland, and joined the R.A.M.C. in March, 1915, gaining his captaincy in March last.

Lieut. J. R. Brown, R.A.M.C., attached Royal Garrison Artillery, received his medical education at Glasgow University, and qualified in 1897. He was at one time house surgeon at the Teignmouth Hospital, and saw service in the South African War. Later he became a medical officer to the British South Africa Company in Southern Rhodesia, and resigned his appointment to join the R.A.M.C. in February this year.

Previously reported Wounded, now reported Died of Wounds.

Capt. G. H. Watson, R.A.M.C.

Died.

Capt. V. J. Rutledge, R.A.M.C., received his medical education at Trinity College, Dublin, and qualified in 1891. For some years he held the position of assistant medical officer of the District Asylum, Londonderry, and joined the R.A.M.C. in May, 1915.

Wounded.

Capt. C. R. Grant, M.C., R.A.M.C., attached Royal Field Artillery.

Capt. O. De Muth, R.A.M.C.

Lieut. J. W. Wayte, R.A.M.C., attached Hampshire Regiment.

Lieut. A. C. Wilson, R.A.M.C., attached Northumberland Fusiliers.

Capt. H. J. Bower, R.A.M.C.

Previously reported believed taken. Prisoner at Kut-el-Amara, now reported Prisoner.

Capt. G. O. Weston, Indian Subordinate Medical Department.

Previously reported Prisoners in Turkish Hands, now reported Exchanged.

Major E. V. Aylen, R.A.M.C.

Lieut.-Col. H. O. B. Browne-Mason, R.A.M.C.

Capt. A. S. Cane, R.A.M.C.

Capt. W. L. E. Fretz, R.A.M.C.

Lieut.-Col. J. Hennessy, C.B., R.A.M.C.

Capt. A. T. J. McCreery, R.A.M.C.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Second Lieut. C. U. Kilner, Suffolk Regt., eldest son of Dr. C. S. Kilner, of Bury St. Edmunds.

Capt. F. E. G. Porter, Loyal North Lancashire Regt., elder son of Dr. W. E. Porter, J.P., of Wood Green, London.

Capt. W. M. Stewart, Devonshire Regt., attached to the Machine Gun Corps, only son of Dr. R. W. Stewart, Australian Army Medical Corps, of Adelaide, South Australia.

Lieut. J. R. Brown, R.A.M.C., attached to the Royal Garrison Artillery, third son of the late Dr. J. R. Brown, of Saltcoats, Ayrshire.

Second Lieut. E. G. Leggatt, Argyll and Sutherland Highlanders, only son of Dr. G. S. Leggatt, of Harpenden, Herts.

Second Lieut. C. F. H. Fenner, Scots Guards, son of Mr. R. Fenner, of Spanish-place, Manchester-square, London.

THE HONOURS LIST.

The following awards to medical officers for conspicuous gallantry and devotion to duty in the field are announced:—

Distinguished Service Order.

Temp. Capt. George Douglas Ferguson, M.B., R.A.M.C.

Tended the wounded under very heavy fire, bringing in over fifty wounded men, and displaying the greatest courage and determination. His fearless bearing set a fine example.

Major Lewis Wibmer Jeffries, Australian A.M.C.

Tended the wounded and reorganised the stretcher-bearers in the front line at great personal risk. When only a few bearers were left he himself assisted to carry back the wounded under heavy fire.

Lieut.-Col. Ethelbert Brown Hardy, Canadian A.M.C.

Controlled the evacuation of the sick and wounded, and by his energy and courage kept up the spirits of the stretcher-bearers when they were much exhausted.

Lieut.-Col. Harry Merville Jacques, Canadian A.M.C.

Supervised the clearing of the front and controlled the work of the advanced and main dressing stations with great skill and personal courage.

*Bar to the D.S.O.***Temp. Capt. Hugh Llewellyn Glyn Hughes, D.S.O., R.A.M.C.**

On four separate days he showed an utter contempt for danger when collecting and tending the wounded under heavy shell-fire. (D.S.O. recorded in *THE LANCET*, Sept. 2nd, 1916.)

*Military Cross.***Temp. Capt. Malcolm King Acheson, M.D., R.A.M.C.**

Tended the wounded under very heavy fire, displaying great courage and determination. By his devotion and initiative he was instrumental in saving many lives.

Temp. Capt. John Alban Andrews, M.B., R.A.M.C.

Tended the wounded with utter disregard of personal danger, dressing their wounds under heavy sniping fire from a trench 450 yards distant. He also got the wounded into shell-holes till they could be collected after dark.

Capt. James Elliot Black, M.B., R.A.M.C., Special Reserve.

Rendered valuable services when attending the wounded under heavy machine-gun and shell-fire. Later he went out into "No Man's Land" to succour the wounded.

Capt. Austin Basil Clarke, M.B., R.A.M.C.

Showed great coolness during the assault, and for 30 hours afterwards under intense shell and machine-gun fire. He tended the wounded in the open the whole time, his aid-post being full, and, after dark, went out and searched the wood under heavy shell-fire.

Temp. Lieut. Sydney John Darke, M.B., R.A.M.C.

Although badly wounded he worked for five and a half hours under heavy shell-fire, tending the wounded, without letting any one know he was wounded himself. His gallantry throughout the operation was very fine.

Capt. Henry Bryan Frost Dixon, M.B., R.A.M.C.

Volunteered and led a stretcher party to a regimental aid-post under very heavy fire, and successfully brought in 25 wounded men.

Temp. Lieut. John Beatson Dunning, M.B., R.A.M.C.

Went into the open under heavy shell-fire and tended the wounded until he was himself severely wounded.

Temp. Lieut. William Norman Gilmour, M.D., R.A.M.C.

Gallantly dressed a wounded man lying in "No Man's Land," and finally brought him in, with great courage, under very heavy fire.

Temp. Lieut. Robert Inkerman Harris, M.B., R.A.M.C.

Commanded the stretcher-bearers throughout the entire day under incessant fire, and set a fine example of energy and pluck.

Temp. Capt. Frank Melville Harvey, R.A.M.C.

Repeatedly tended the wounded in the open under very heavy fire, and worked continuously for 36 hours, showing an utter disregard of danger.

Temp. Capt. Richard Harold Hodges, R.A.M.C.

Organised and led parties of stretcher-bearers under heavy fire, displaying great courage and determination.

Capt. William John Sivewright Ingram, M.B., R.A.M.C., Special Reserve.

Tended the wounded under very heavy fire, displaying great courage and determination throughout. He set a splendid example of coolness and devotion to duty.

Temp. Capt. Edward Sandwith Johnson, R.A.M.C.

Although severely wounded, he remained at his aid-post, and continued to dress the wounded with great skill and determination. He has previously done splendid work.

Capt. John Herbert Jordan, R.A.M.C.

Under very heavy fire he reconnoitred the front area for wounded, and by his gallantry was instrumental in recovering many wounded men from shell-holes.

Temp. Capt. John Macintyre, M.B., R.A.M.C.

Tended and dressed the wounded under heavy fire with great courage and determination, himself being four times buried by shells.

Capt. William Edward Marshall, M.B., R.A.M.C.

Tended the wounded under very heavy fire with great courage and determination. On one occasion he worked single-handed for over 24 hours.

Capt. William Archibald Miller, D.S.O., M.B., R.A.M.C., Special Reserve.

Accompanied a raiding party with his stretcher-bearers, and remained in the enemy trenches until quite certain no raiders were left behind. Previously he had accompanied a patrol under heavy fire and tended the wounded. He has on many previous occasions displayed great gallantry and determination.

Temp. Capt. John Hay Moir, M.D., R.A.M.C.

Although wounded, he tended the wounded under very heavy fire, displaying great courage and determination, and refusing to be relieved until all the wounded had been evacuated.

Temp. Capt. Patrick Joseph O'Reilly, R.A.M.C.

Tended the wounded under intense fire, displaying great courage and determination. Later, although wounded, he stuck to his post.

Temp. Capt. Wyndham Parker, M.B., R.A.M.C.

Tended the wounded under very heavy fire for 36 hours, displaying great courage and determination. Later he rescued wounded officers under intense fire.

Temp. Capt. William Henry Parsons, M.D., R.A.M.C.

Established the most advanced aid-post of the brigade front, and, although slightly wounded, cleared over 300 cases. Subsequently, working all night, he cleared in all over 400 cases.

Capt. Edward Phillips, M.B., R.A.M.C.

Collected wounded under heavy shell, rifle, and machine-gun fire. He set a fine example by his complete disregard of danger.

Temp. Capt. James Henry Ritchie, M.B., R.A.M.C.

Tended the wounded and organised stretcher parties under very heavy fire, displaying great courage and determination.

Capt. Hugh Huntley Robinson, R.A.M.C.

Tended the wounded with great courage and skill, quite regardless of personal danger. He has on many previous occasions displayed the greatest bravery.

Temp. Lieut. Clifford Maunsell Scott, R.A.M.C.

Tended wounded with great skill and determination under intense fire. He has done fine work on many previous occasions.

Temp. Capt. John Telfer Smeall, M.B., R.A.M.C.

Tended wounded with great skill and determination under intense fire. He has done fine work on many previous occasions.

Temp. Lieut. Frederick James Strachan, M.B., R.A.M.C.

Tended and dressed the wounded under heavy fire, with great courage and determination. Later, although himself wounded, he continued to carry out his fine work.

Capt. John Ronald Rigden Trist, R.A.M.C., Special Reserve.

Tended and dressed the wounded under heavy fire, with great courage and determination. He has on many previous occasions done fine work.

Temp. Capt. Gideon Walker, M.B., R.A.M.C.

Cleared the wounded of the battalion with remarkable efficiency. In addition, he worked for two days under heavy and continuous shell fire evacuating wounded.

Capt. Archibald Wilson, M.B., R.A.M.C., Special Reserve.

Organised and led parties of stretcher-bearers under very heavy fire, displaying great courage and determination. He has on many previous occasions done fine work.

Temp. Lieut. Clarence Randolph Young, M.B., R.A.M.C.

Tended the wounded under very heavy fire, displaying great courage and determination.

Capt. Charles Corlis, Australian A.M.C.

Tended the wounded under very heavy fire with great courage and determination, working continuously for three days and nights.

Capt. William Wallace Stewart Johnston, Australian A.M.C.

When his battalion was relieved, he stayed behind to tend the wounded, and then went forward through a heavy enemy barrage and dressed a wounded officer and several other men in the front trench. He also tended others while returning under fire.

Capt. James Sprent, Australian A.M.C.

Tended the wounded under very heavy fire with great courage and determination. He personally supervised and organised the forward portion of tending the wounded right up to the firing line.

Capt. David Macdonald Steele, Australian A.M.C.

Tended the wounded under very heavy fire and trying conditions with great courage and determination. It was due to his organisation and skill that the wounded men were successfully evacuated.

Capt. William Henry Weston, Australian A.M.C.

Established an aid-post in the open and tended the wounded under very heavy fire. He has displayed great courage and determination throughout.

Capt. Kenneth Edgar Cooke, Canadian A.M.C.,

Tended the wounded for two days and nights, under intense fire, with great gallantry and ability.

Capt. Howard Brown Jeffs, Canadian A.M.C.

Although wounded himself, he tended the wounded under very heavy fire with great courage and determination. Later, being again wounded, he remained on duty till relieved.

Capt. Victor Henry Kingsley Moorhouse, Canadian A.M.C.

Tended the wounded under very heavy fire, displaying great courage and determination throughout.

Capt. Thomas Francis O'Hagan, Canadian A.M.C.

Rescued a wounded officer and five men under very heavy fire. Later he tended the wounded in an advanced dressing-station under heavy fire. He displayed great courage and determination throughout.

Capt. Alex. Harold Taylor, Canadian A.M.C.

Tended the wounded under very heavy fire with great courage and ability. He has on many previous occasions displayed great bravery.

Capt. William Lawrence Whittemore, Canadian A.M.C.

Although wounded he carried out his duty with great courage and determination. He has on many previous occasions displayed great gallantry.

*Bars to the M.C.***Temp. Capt. Cyril Mary Brophy, M.C., R.A.M.C.**

Tended a wounded officer under intense fire. Later he carried out the work of rescuing the wounded with great courage and determination. He has on many previous occasions done fine work. (M.C. recorded in THE LANCET, August 5th, 1916.)

Capt. John Arthur Cullum, M.C., Canadian A.M.C.

Carried out the evacuation of the wounded under very heavy fire with great courage and skill, and at great personal risk. He has on many previous occasions done very fine work. (M.C. recorded in THE LANCET, August 5th, 1916.)

Temp. Capt. William Foot, M.C., M.B., R.A.M.C.

Tended the wounded without any regard for his own safety, and by his coolness throughout the action undoubtedly saved many lives. (M.C. recorded in THE LANCET, Jan. 22nd, 1916.)

A PATRIOTIC FUND FOR MEDICAL PRACTITIONERS.

The Central Medical War Committee and the Local Medical War Committees throughout the country find one of their most difficult and anxious tasks to be safeguarding the practices and interests of those who are away on service. The work of the local committees has been admirable and their members have worked hard in the interests of their colleagues. But, when all has been done, when forgetfulness, apathy, and purposeful neglect have been corrected, there must necessarily be a loss of value in the practices of the absentees, if only because there can be, during absence on naval and military duty, no natural inflow of new patients to meet an equally natural loss of old ones. And the longer the term of service the more certain will be that loss. Whilst the man is away the loss may not mean much, and in some cases his army pay may largely meet it, but on his return the loss may be serious. All his old obligations—rent, establishment charges, insurance premiums, possibly interest on money borrowed to buy the practice—all will have to be met, with increased taxation and a lessened income. Yet he cannot quit his house for a smaller, a move may mean the loss of his livelihood, he must maintain his status at all costs. The dread of these obligations hangs like a millstone round the neck of not a few of our younger men, who, but for this, would long since have been in the field; and the tale of these cases is a growing one in the experience of the war committees. These are no anticipations born of the proverbial middle-class fear of poverty. The irrefutable facts of such cases have been sent to the Central Medical War Committee, and from small provincial towns where, if anywhere, the bond between doctor and patient is stable. If in the countryside this bond be broken, how will it hold in London and the great cities?

That these hard cases must be met is a necessity and a patriotic duty. The Auxiliary R.A.M.C. Fund, whose claims are urged eloquently in another column by Dr. William Collier, cannot attempt to cover the field here indicated. The younger men must be able to take their turn of service, and both they and those already in the field must be secure of their status on their return. No Government provision will meet their heavy obligations, and to their professional brethren they cannot be allowed to turn without response. A unanimous vote of the Representative Meeting of the British Medical Association directed the Council of the Association to consider the advisability of raising some fund to help medical practitioners taking service. Investigations made by the Central Medical War Committee show that, whilst there are admirable societies ready and willing to act as the almoners of the profession in helping the families of men on service and to care for the widow and orphan, there is no way of helping men in these large financial matters other than by recourse to commercial banks and professional moneylenders.

To meet these financial difficulties a proposal supported by the Central Medical War Committee was made that a fund should be created from which loans might be made to men leaving home for military service, or on their return home, and for a period sufficient to allow of the re-establishment of their position. At the last quarterly meeting of the Council of the British Medical Association a special committee was appointed to deal with the matter, and invitations were sent to several influential medical bodies, asking them to take part in determining the character and in initiating the proposed fund.

A meeting was accordingly held at the offices of the British Medical Association on Wednesday afternoon last to consider "the formation of a patriotic fund for the use of medical practitioners who suffer financially through taking naval or military service during the war." The chair was taken by Mr. E. B. Turner, chairman of Representative Meetings of the British Medical Association, and there were present, besides the principal office-holders of the Association, representatives of the Royal College of Physicians of London, the Royal College of Surgeons of England, the Royal College of Surgeons of Edinburgh, Sir Henry Morris, treasurer of Epsom College, Dr. Samuel West, treasurer of the Royal Medical Benevolent Fund, representing also the Professional Classes Relief Fund, Dr. John Adams, Dr. C. O. Hawthorne, Lieutenant-Colonel R. A. Bolam, and Dr. William Collier, who is an energetic worker for the R.A.M.C. Auxiliary Fund. Mr. Bishop Harman, who convened the meeting, briefly stated the necessities for a fund to supply the pecuniary needs of men who returned from service to find their practices decreased in value, their obligations pressing heavily, and for the time being their available incomes being at an end. He stated that the Prince of Wales Fund could not give adequate assistance because it might be wound up before the expiry of any term of years which would be required to make a loan scheme effective, while ordinary banking terms were prohibitive. The profession, in his opinion, therefore, would be thrown back upon the creation of a Loan Fund.

Sir Henry Morris invited details showing the necessity for the institution of such a fund, when ample evidence was forthcoming from England and from Scotland that many hard situations already had occurred, and that many more must be anticipated. Upon this a formal resolution was passed by the meeting that a case had been made out for the formation of a fund to assist by loans medical practitioners who suffered financial loss owing to taking service with the Navy and Army. It was strongly felt by the meeting that such a fund must be made representative of the medical profession as a whole, and must conduct its operations on strictly business lines, temporary accommodation, not charity, being its object.

NEW V.A.D. HOSPITAL FOR DEVON.—Ryall's Court, Seaton, is to be fitted up as a V.A.D. hospital. It is hoped that accommodation will be provided for 50 patients.

A WAR CRÛCHE AT PORTSMOUTH.—A well-appointed crèche for the children of sailors and marines who have lost their lives in the war, and whose widows have to supplement their pensions by going out to work, has been opened at Portsmouth. A child-welfare and maternity sub-centre, of which there are others in the borough, will also be carried on in the house.

THE SCOTTISH WOMEN'S HOSPITAL UNIT.—Information has been received at the headquarters of the Scottish Women's Hospital in Edinburgh of the safe arrival of Dr. Elsie Inglis and her hospital unit, which has gone to assist the Roumanians at a point on the Danube close to the Russian frontier. The Croix de Guerre has been awarded to Dr. A. Louise McIlroy for her work as médecin chef first at Troyes, France, and later with the Armée d'Orient in Serbia. Dr. McIlroy is now at Salonika.

WOUNDED ALLIES RELIEF COMMITTEE.—Assorted articles contained in 148 cases, 28 bales, 7 crates, &c., were sent out last week to Salonika for the Committee's Hospital at Vodena. The stores included: Plates, kettles, meat-dishes, teapots, saucepans, mugs, basins, stationery, writing pads, pencils, ink, needles, thread, mending wool, tape, thimbles, pins, blind-cord, book muslin, calico, flannel, combs, candles, soap, biscuits, jam, marmalade, milk, rice, cocoa, lentils, peas, flour, hams, golden syrup, chocolate, soup-tablets, and safety matches, in addition to drugs, surgical appliances, medical bandages, and dressings of all kinds, stretchers, pneumonia jackets, shirts, pyjamas, waistcoats, boots, slippers, and operating stockings. A motor ambulance with spares was also despatched, and in one of the crates was a bath unit, presented by the Empress Club. The Committee sent out at the same time six cases containing swabs, bandages, &c., for the use of the Serbian Red Cross Society.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At a meeting of Comitia of the Royal College of Physicians of London on Oct. 26th and of the Council of the Royal College of Surgeons of England on Nov. 9th, diplomas of L.R.C.P. and M.R.C.S. were respectively conferred upon 89 candidates—81 men and 8 women—who have passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Examining Board. The following are the names and medical schools of the successful candidates, viz.:—

John Arnold Molony Alcock, Guy's; Ivor Aubrey, University College, Cardiff, and University College Hospital; Augustus Rollo Balmain, Birmingham University; Herbert Edward Bamber, M.A. Oxon, Oxford University and Guy's; James Reid Banks, University College Hospital; Frank Aubrey Benner, M.D., C.M. McGill, McGill University; James Allan Berry, Durham University and Guy's; John Francis Carter Braine, Guy's; Wilfrid Stephenson Brown, B.A. Cantab, Cambridge University and St. Thomas's; John Brumwell, Durham University; Charles Noel Carter, B.A. Cantab., Cambridge University and St. Thomas's; Hetty Ethelberta Claremont, Royal Free and St. George's; William John Colborne, Charing Cross; Leslie Cunningham, Cambridge University and St. Bartholomew's; Stephanie Patricia Laline Hunte Taylour Daniel, Royal Free; Albert William Abell Davies, Guy's; George Day, St. Bartholomew's; Martin Joseph de Lemos, Bombay University and King's College Hospital; Joseph Edouard Evariste de Robillard, Guy's; Arthur Farrell Renner Dove, M.B., B.S. Durh., Durham University; Alfred Beresford Dummere, London Hospital; Herbert James Duske, Edinburgh University and St. Mary's; Henry Andrew Faulkner, Melbourne University and Middlesex; Susan Alfreda Finch and Marjorie Ellen Franklin, Royal Free; Humphrey Douglas Gardner, B.A. Cantab., Cambridge University and University College Hospital; Edmund Onslow Goldsmith, B.A. Cantab., Cambridge University and St. Bartholomew's; Thomas Sacheverell Greenaway, Westminster; Llewellyn Grey, University College, Cardiff, and University College Hospital; James Maurice Harrison, St. Thomas's; Basil Haskins, Otago and Edinburgh Universities and St. Bartholomew's; Richard Brunel Hawes, St. Thomas's; John Frederic Haynes, B.A. Oxon, Oxford University and St. Bartholomew's; Graham William Heekels, Guy's; William Broke Heywood-Waddington, St. Bartholomew's; Eric Blanford Hickson, University College Hospital; John Anderson Hill and Charles Guy Hitchcock, London Hospital; Lionel Snowden Holmwood, Middlesex; Charles Ewart Hopwood, Manchester University; George James Proctor Huddleston, Birmingham University and University College Hospital; Oscar Cecil Lawrence Hughes, Birmingham University; James Wynn Hyatt, London Hospital; Stewart Russell Johnston, University College Hospital; Percy Tudor Jones, University College, Cardiff, and University College Hospital; Guy Melville Kendall, B.A. Cantab., Cambridge University and St. Thomas's; Elias Panagis Lazaras, M.D. Athens, University of Athens and University College Hospital; Douglas Leonard Lees, Bristol University; Ernest Alfred Lavisier, Guy's; Rhys Thomas Lewis, University College, Cardiff, and University College Hospital; Eric Ivan Lloyd, B.A. Cantab., Cambridge University and St. Bartholomew's; Peter McGibbon, M.B. Tor., Toronto University; Owen Sidney, Martin, University College Hospital; Arthur Morford, B.Sc. Lond., and Richard Moser, St. Bartholomew's; Bernard Mountain, M.A. Cantab., Cambridge University and University College Hospital; Noel Spencer Nairne, St. Thomas's; Charles Leslie Odum, B.A. Cantab., Cambridge University and Guy's; Mustafa Ahmed Omar, Cairo and Charing Cross; Walter Davies Pearman, Birmingham University and St. Mary's; Margaret Stuart Palmer, Royal Free; Aron Ber Pastel, Paris and Charing Cross; Enid Maud Pfeil, Royal Free; Bertram Hensell Pidcock, St. Bartholomew's; Cecil Nuttall Ratcliffe, Liverpool University; Alan Harvey Richardson, St. Thomas's; Paul Rigault Riggall, University College Hospital; Charles Young Roberts, St. Thomas's; Arthur Rodd, University College Hospital; James Ernest Scanlan, St. Mary's; Elisabeth Henrietta Schwab, Royal Free; Ralph Roylance Scott, Durham University; Steuart Noy Scott, Charing Cross; Francis Nasmith Sidebotham, B.A. Cantab., Cambridge University and Guy's; Gordon Ernest Lovell Simons, Guy's; Robert Gordon Simpson, London Hospital; John Forest Smith, St. Thomas's; John Walter Graham Steel, M.A. Oxon, Oxford and Manchester Universities; Harold Sterne-Howitt, Guy's; Norman Burke Taylor, M.B. Tor., Toronto University and London Hospital; Cecil Henry Terry, B.A. Oxon., Oxford University and St. Bartholomew's; Rustom Navroji Vakil, University College Hospital; Anna Petronella van Heerden, University of Amsterdam; Frank Hamilton Vey, B.A. Cantab., Cambridge University and St. Thomas's; Samuel Vidot, Guy's; Oscar Williams, B.Sc. Wales, University College, Cardiff, and University College Hospital; Thomas Pearce Williams, Middlesex; Graham Selby Wilson, Charing Cross; and William Yeoman and Campbell Young, University College Hospital.

* Diploma of M.R.C.S. conferred on Oct. 12th.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary meeting of the Council was held on Nov. 9th, Sir William Watson Cheyne, the President, being in the chair. In accordance with a report from the Court of Examiners it was resolved to issue diplomas of Membership to 89 successful candidates. A letter was read from the Financial Secretary and Business Manager of the British Medical Association reporting that at a meeting of the Council of the British Medical Association on Oct. 25th attention was called to the heavy financial sacrifice made by many medical men who have joined the Army and Navy, and the sacrifice anticipated by those who are liable for service, and

stating that the Council of the Association will be pleased if the Royal College of Surgeons will nominate a representative to serve on a committee to review the whole position, and, if possible, formulate a scheme whereby those deserving of assistance through patriotic service may be assisted. Mr. H. J. Waring was appointed to represent the Council. The secretary reported the delivery of the following museum demonstrations: By Mr. S. G. Shattock, Pathological Curator, three demonstrations on "wounds and their repair" and on "injuries to arteries"; and two demonstrations by Mr. J. F. Colyer, Honorary Curator of the Odontological Collection, on "fractures of the jaw." The President reported that the Bradshaw Lecture would be delivered by Colonel Charters J. Symonds, C.B., A.M.S., on Friday, Dec. 15th, and that the subject of the lecture would be "Gunshot Injuries of the Spinal Cord." The President reported that he had granted the use of the lecture theatre for five lectures in December on "The Part Played in Disease by Water, Salts, and other Simple Substances," by Dr. E. Mellanby, acting superintendent of the Brown Animal Sanatory Institution.

MEDICAL MAYOR.—Mr. William Fookes Thompson, M.D., C.M. Edin., coroner for the Launceston district of Cornwall, has been selected to be Mayor of Launceston for the ensuing year.

MATERNITY AND CHILD WELFARE: CONFERENCE AT DURHAM.—At a conference of medical officers, health visitors, district nurses, and social workers held recently at Durham under the auspices of the Council of the Royal Sanitary Institute, Sir Henry Turner, C.B., presiding, the subject of "Maternity and Child Welfare" was discussed. Dr. Harold Kerr, medical officer of health of Newcastle-on-Tyne, gave an account of the steps taken in Newcastle to deal with infant mortality. He commended the provision of cheap and nourishing dinners for pregnant and nursing women to benevolent consideration, and deprecated the industrial employment of nursing mothers. He regretted that under the Midwives Act it was practically impossible to obtain a conviction against an uncertified woman owing to the difficulty of proving "habitual" practice. A genuine emergency must, of course, be met with the means to hand, but unless they were careful every case would be an emergency before long, for these women were taking full advantage of the shortage of doctors and midwives to re-establish themselves. Dr. T. Eustace Hill, medical officer of health of Durham county, detailed the work of the Durham county council in dealing with the problem of infant mortality. Before health visitors were appointed the mortality was 160 per 1000; now it had been reduced to 130. But there still remained bad housing and other insanitary conditions to deal with after the visitors had done their work. The housing question must be kept to the front if the infant life of the country was to be properly safeguarded. Miss H. S. Cooper-Hodgson, county superintendent of health visitors, alluded to the lamentable lack of trained nurses in the populous districts of Durham county.

POOR-LAW MEDICAL OFFICERS' ASSOCIATION OF ENGLAND AND WALES.—At the last council meeting of this association, held at 9, Copthall-avenue, E.C., the honorary secretary, Dr. Major Greenwood, reported the case of a provincial member who held a commission in a Territorial regiment and who complained that the War Office proposed to deduct from his military pay the salary he was receiving from his guardians as workhouse medical officer, because his infirmity had been taken over by the military authorities. He was still attending to certain "scattered homes," attendance on which formed part of the duties for which his salary was paid. It was announced that the War Office had, upon this explanation, decided to permit this member the full benefit of his Poor-law salary. The medical superintendent of a large provincial infirmary wrote, asking if he were not entitled to summer holiday, and, if so, for how long, as he had been very hard worked, and had been without assistance for some time. He also asked if he ought to receive extra remuneration for attending wounded soldiers in his institution, they not being Poor-law patients. The honorary secretary said that he had explained that there was no statutory right to a holiday, and with regard to the admission of soldiers into the infirmary in the place of sick paupers the medical officer would have to attend to them, but he had the right of appeal to the Local Government Board. A letter was read from a member, stating that his board would not make him a superannuation grant or return his contributions on the resignation of his office as district medical officer, which resignation had been due to his having been called up for war service, making it impossible to carry on his practice. The Council agreed that as the member was not entitled to superannuation allowance by his length of office, nor to a return of his contributions, he must rely on the generosity of the guardians. But it was thought a great hardship that resignations of this kind should be regarded as voluntary.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Control of Food.

THE statement made on Wednesday by Mr. RUNCIMAN, the President of the Board of Trade, in the House of Commons on the control of food is regarded as of very far-reaching importance. The consuming capacity of the people of the United Kingdom, the right honourable gentleman said, had gone up, notwithstanding high prices. As the problem extended the Government had come to the conclusion that they must have a controller of food, someone who had nothing to do but to deal with the problem and coordinate all the activities of various departments and committees. The Government were to issue regulations under the Defence of the Realm Acts. Provision was to be made to enable proceedings to be taken against any person who wasted or destroyed unnecessarily any article of food. That would prevent milk being poured away. Powers were also to be taken to prescribe the purposes to which an article could or could not be put. Another important regulation dealt with flour and its manufacture. The old pure white flour from which had been abstracted some of its best qualities would not be milled in future. Mr. RUNCIMAN was authorised by the Local Government Board to state that regulations would be made requiring millers to produce only the straight-grade flour and to mill not less than a fixed percentage. The intention was to raise the yield of flour about 8½ per cent. Measures of control would be exercised over imported flour. If it became necessary, food tickets would have to be adopted. Closely connected with the control of food are questions of agriculture and shipping. With these the Government are dealing.

The Pensions Board.

A Bill was brought in on Tuesday by Mr. A. Henderson to establish a Board of Pensions.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 8TH.

Naval Surgeons at Gallipoli.

Major HUNT asked the Secretary to the Admiralty whether naval chaplains and naval surgeons who were present at the landing and subsequent operations at Gallipoli would be asked to give evidence before the Dardanelles Commission.—Mr. MACNAMARA replied: That is entirely a question for the Commissioners themselves to determine.

Major HUNT: If these surgeons and chaplains are not called a great deal of very valuable evidence will be left out which should be heard.—Mr. MACNAMARA: It is for the Commission to carry out its duties. The Commission is empowered to call anyone it pleases, provided, of course, the presence of the witnesses can be arranged subject to the exigencies of the Service and there is no other proviso.

Invalid Prisoners of War.

Replying to Mr. MALCOLM, Mr. J. F. HOPE (Treasurer of the Household) said: An agreement has been in force between His Majesty's Government and the German Government since August, 1915, for the repatriation of British and German civilian prisoners of war who are invalids. That agreement has not worked altogether satisfactorily, but as His Majesty's Government are of opinion that the repatriation of these invalids is preferable to their internment in a neutral country, they are putting forward a proposal based on the existing agreement which it is hoped will lead to the repatriation of a larger number of invalids. The main points of the new proposal are that a definite schedule of disabilities entitling applicants to repatriation should be adopted, and that an examining medical commission should be appointed for each country, each containing two Swiss doctors.

Replying to another question put by Mr. MALCOLM, Mr. HOPE said: It has not yet been possible to put into operation the arrangement for the mutual repatriation of incapacitated prisoners of war which has been concluded between this country and the Bulgarian Government. We believe that only very few of our men would benefit by it. A similar arrangement has been concluded with the Turkish Government, who suggested that transfer should take place by way of Sweden. This appears to be impracticable, but it is hoped that an opportunity to effect the change may be found.

THURSDAY, NOV. 9TH.

Dental Treatment for Soldiers.

Mr. MACCALLUM SCOTT asked the Financial Secretary to the War Office whether private dentists were still being employed to provide dental treatment for soldiers; whether

expenditure was being incurred for railway travelling expenses of soldiers to be treated; and whether there was a staff of military dentists sufficient to cope with the work.—Mr. FORSTER wrote in reply: Civilian dentists are employed at stations where there are not sufficient troops to occupy a whole-time dentist. Travelling expenses are being incurred in places where there is no dentist available. The answer to the last part of the question is in the affirmative.

Sir JOHN JARDINE asked the honourable gentleman with reference to dental personnel and equipment, whether, instead of waiting for demands which the people on the spot might not know that they were entitled to make, he would wire to the general officers commanding in Egypt, Mesopotamia, and Salonica, and inquire if they were personally satisfied with the amount of the dental personnel and equipment.—Mr. FORSTER (in a written answer) replied: I do not think that the action proposed is necessary, as general officers commanding are well aware that they will be supplied with any dental treatment that may be necessary. I may also say that the general officer commanding in Mesopotamia has specifically informed the Army Council that his requirements in dental personnel and equipment have been fully met.

Nurses in Mesopotamia.

Sir J. JARDINE asked the Financial Secretary to the War Office how many nurses there were in Mesopotamia and where they were stationed.—Mr. FORSTER replied: There are 168 nurses in Mesopotamia, who are stationed partly at Basra and partly at Amara.

Scurvy in Mesopotamia.

In answer to Sir D. GODDARD, who asked whether there had been a number of cases of scurvy amongst the troops in Mesopotamia, Mr. FORSTER wrote: There has been scurvy, but it has been confined to the Indian troops in Mesopotamia. The medical authorities in Mesopotamia have, however, taken the necessary measures to deal with it.

Pay in the Royal Army Medical Corps.

Mr. MONTAGUE BARLOW asked the Financial Secretary to the War Office whether there was a uniform rate of pay for all medical practitioners now holding commissions of equal rank in the Royal Army Medical Corps; and whether those doctors coming within the Military Service Act received less than those who came within the Enrolment Scheme.—Mr. FORSTER wrote in reply: There are two forms of temporary commissions in the Royal Army Medical Corps. Before the Military Service Act came into operation medical men joined the Army either under a special contract or through the Special Reserve. Since the Act came into force all medical men who have not enrolled with the Central Medical War Committee, and are compelled to serve, are taken into the Special Reserve. The pay of the Special Reserve is lower than that received under the contract, but when the gratuities given on cessation of employment are taken into consideration there is little difference in the emoluments.

TUESDAY, NOV. 14TH.

Cocaine in Dentistry.

Mr. RAFFAN asked the Home Secretary whether he could now state the composition of the committee which it was proposed to set up to consider whether supplies of cocaine were to continue to be available for dental purposes and the proposed terms of reference to the committee.—Mr. H. SAMUEL replied: Yes, sir. The members will be: The Right Honourable Charles Hobhouse, M.P., who, I am glad to say, has consented to act as chairman, Mr. Stanley Baldwin, M.P., Professor Bayliss, Mr. James O'Grady, M.P., and His Honour, Judge Ruegg. The terms of reference to the committee will be "to consider the authorisations granted for the use of cocaine in dentistry and to advise whether or not they might be continued or modified, and if continued, in what cases and under what conditions."

T.N.T. Poisoning.

Replying to Lord HENRY CAVENDISH-BENTINCK, who asked how many workers in the United Kingdom had in the last six months died from T.N.T. poisoning and how many of these had died from inhaling poisonous fumes, Mr. BRACE (Under Secretary for the Home Department) said: The number of deaths for the six months ending Oct. 31st is 41. It is impossible to say how many of these were caused by inhalation of fumes. There is now reason to think that absorption through the skin is the chief danger, and there may be absorption of poison by both channels in the same case.

Lord HENRY CAVENDISH-BENTINCK asked a further question regarding the installation of exhaust ventilation in connexion with T.N.T. fumes.—Dr. ADDISON (Parliamentary Secretary to the Ministry of Munitions) replied: A strong committee was appointed a short time since by the Ministry, after consultation with the Home Secretary, to examine the problems arising out of T.N.T. poisoning, both from the mechanical and medical points of view,

and to make recommendations to the Ministry. Much useful work has already been done by the Committee, and the recommendations so far made have been adopted by the Ministry and are being put into effect. The noble lord will recognise that many of the problems which arise are entirely new and in some cases difficult of scientific investigation. He may rest assured that such steps as may be found to be necessary will be taken without hesitation.

Scurvy in Mesopotamia.

Answering Sir JOHN JARDINE, Mr. FORSTER said that so far as he knew the supply of vegetables to the troops was as abundant as could be made.

Sir JOHN JARDINE: And lime-juice, too, as a protection against scurvy?—Mr. FORSTER: Yes, sir, every possible precaution will be taken.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

- BELL, CHARLES EDWARD WALLACE, M.R.C.S., L.R.C.P., L.M. Edin., has been appointed Honorary Consulting Surgeon to the Royal Devon and Exeter Hospital.
- BRAITHWAITE, R. W., M.D. St. And., a Medical Commissioner of the Board of Control for Lunatics and Mental Defectives.
- BRODRICK, CHARLES CUMBERLAND, L.R.C.P., L.R.C.S., L.M. Edin., Medical Officer of Health for the Tavistock (Devon) Rural District.
- COOK, F. M., M.B. Lond., Acting Chairman of the Board of Control for Lunatics and Mental Defectives.
- GARDNER, F. G., M.R.C.S., L.S.A., Captain, R.A.M.C. (T.F.), Clinical Assistant in the Ear and Throat Department, Radcliffe Infirmary, Oxford.
- GOOD, ARNOLD SEXTY, L.R.C.P., M.R.C.S., Public Vaccinator by the Great Torrington (Devon) Board of Guardians.
- O'CONNOR, BRIDGET I., Assistant Medical Officer of Health for the Borough Maternity and Child-Welfare Scheme at Plymouth.
- OSMOND, CHARLES HOLDWAY, L.R.F.P.S. Glasg., L.S.A., Public Vaccinator for Hayle (Cornwall).
- PRIDHAM, FREDERICK CHARLES, L.R.C.P., M.R.C.S., Medical Officer for the Great Torrington District and Workhouse by the Great Torrington (Devon) Board of Guardians.
- SINCLAIR, G., M.D. Durh., Medical Referee under the Workmen's Compensation Act, 1906, for the Sheriffdom of Caithness, Orkney, and Shetland.
- STQUILA, R. R., M.R.C.S., L.R.C.P., House Surgeon to the Ear, Nose, and Throat Hospital, Great Portland-street.

Certifying Surgeons under the Factory and Workshops Acts: BLAIR, J., M.D., M.S. Q.U.I. (St. Anne-on-the-Sea, Lancs.); and ROBINSON, H. J., M.B., B.C. Cantab. (Kirkoswald, Cumberlands).

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index). When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

- BARROW-IN-FURNESS, NORTH LONSDALE HOSPITAL.—House Surgeon. Salary £250 per annum, with board, &c.
- BIRMINGHAM CITY, YARDLEY ROAD SANATORIUM AND TUBERCULOSIS DISPENSARY, Broad-street.—Assistant Medical Officer. Salary £300 per annum, with board, &c.
- BRISTOL ROYAL INFIRMARY.—House Physician. Salary at rate of £120 per annum, with board, &c.
- CARDIFF, KING EDWARD VII.'S HOSPITAL.—Medical Officers and Pathologist.
- CHESTER ROYAL INFIRMARY.—House Surgeon and House Physician. Salary £180 and £160 respectively, with board, &c.
- DARLINGTON HOSPITAL AND DISPENSARY.—House Surgeon. Salary £200 per annum, with board, &c.
- DARTMOOR SANATORIUM, Chagford, Devon.—Medical Assistant.
- DERBYSHIRE ROYAL INFIRMARY.—House Physician and Casualty Officer. Salary £200 per annum, with board, &c.
- DEVONPORT, ROYAL ALBERT HOSPITAL.—House Surgeon, unmarried. Salary £150 per annum, with board, &c.
- FOLKESTONE, ROYAL VICTORIA HOSPITAL.—Resident Medical Officer. Salary £200 per annum, with board, &c.
- GLOUCESTER, GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION.—Surgeon.
- LIVERPOOL, HIGHFIELD MILITARY HOSPITAL.—Assistant Resident Medical Officer. Salary £300 per annum, with rations, &c.
- MANCHESTER, HULME DISPENSARY, Dale-street, Stretford-road.—House Surgeon. Salary £250 per annum, with apartments, &c.
- MANCHESTER ROYAL EYE HOSPITAL.—House Surgeon. Salary £120 per annum, with board, &c.
- MANCHESTER, ST. MARY'S HOSPITALS FOR WOMEN AND CHILDREN, High-street.—Resident Surgical Officer. Salary at rate of £150 per annum, with board, &c.
- NAVAL AUXILIARY HOSPITAL IN SCOTLAND.—Anæsthetist and Assistant Medical Officer. Salary £1 per day, residence, &c.
- NORTHERN HOSPITAL, Winchmore hill, N.—Resident Assistant Medical Officer for the Tuberculosis Wards. Salary 7 guineas per week.
- PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—Temporary Pathologist. Salary £125 per annum, with lunch.
- PRESTON, LANCs. COUNTY ASYLUM, Whittingham.—Locum Tenens, unmarried. Salary £7 7s. per week, with board, &c.

- QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—Clinical Assistants for Medical Out-patient Work for six months.
- ROTTERHAM HOSPITAL.—Junior House Surgeon. Salary £150 per annum, with board, &c.
- ROYAL LONDON OPHTHALMIC HOSPITAL, City-road, E.C.—Third House Surgeon. Salary at rate of £50 per annum, with board, &c.
- ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, W.—Resident Surgical Officer.
- SALISBURY GENERAL INFIRMARY.—House Surgeon, unmarried. Salary £150 per annum, with board, &c.
- VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST ON THE SEPARATE PRINCIPLE.—Assistant Resident Medical Officer.
- VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—Dental Surgeon.
- THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Ballyhaise, Cavan; City of London; Ringwood, Hants; and Hathersage, Derby.

Births, Marriages, and Deaths.

BIRTHS.

- CRAWSHAW.—On Nov. 5th, at Croft House, Glenridding-on-Ullswater, the wife of Ernest John Crawshaw, M.R.C.S., L.R.C.P., of a daughter.
- HERDMAN NEWTON.—On Nov. 8th, at Eglinton-crescent, Edinburgh, the wife of Captain Charles Herdman Newton, R.A.M.C., of a son.
- SKINNER.—On Nov. 5th, to Dr. and Mrs. A. H. Skinner, Hankow, China—a daughter.
- WILLIAMS.—On Nov. 12th, at Alton, Hants, the wife of H. Currey Williams, M.B., of a son.

MARRIAGES.

- CHECCHI—WILSON.—On Sept. 19th, at St. John's Presbyterian Church, Elsternwick, Melbourne, Captain Cyril Checchi, A.A.M.C. (late R.A.M.C.), to Fanny Suddaby, only daughter of Mr. and Mrs. George Wilson, of the Ceylon and India General Mission, Anthiyur, South India.
- DYER—LEE.—On Nov. 7th, at All Saints, Woodton, Norfolk, Surgeon C. Geary Dyer, R.N., and Alice Philippa Driffield Lee, elder daughter of the Rev. F. and Mrs. Lee, of Woodton Rectory, Bungay, Norfolk.
- VIVIAN—THOMPSON.—On Nov. 9th, at St. Paul's Church, Winchmore-bill, N., Charles St. Aubyn Vivian, Temporary Captain, R.A.M.C., to Mary Elizabeth, daughter of the late Rev. J. M. Thompson and of Mrs. Thompson, Hornsey, N.
- WHYTE—GREHAN.—On Nov. 6th, at the Parish Church, Banteer, Captain George Whyte, R.A.M.C., to Magda, second daughter of Stephen Grehan, D.L., of Clonmeen, Co. Cork.

DEATHS.

- MATHEWSON.—Died of wounds, on Oct. 27th, Captain Hamilton Mathewson, R.A.M.C., attached Northampton, aged 34.
- N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

BOOKS, ETC., RECEIVED.

- BADGER, RICHARD G., Boston. Causation and Treatment of Psychopathic Diseases. By Boris Sidis, A.M., Ph.D., M.D. Price \$2.50.
- DENT, J. M., AND SONS, London, Paris, and Toronto. Infancy and Childhood: A Popular Book on the Care of Children. By W. R. Ramsey, M.D., Assst. Prof. of Diseases of Children, University of Minnesota. Price 3s. 6d. net.
- FALCONER, JOHN, Dublin. Transactions of the Royal Academy of Medicine in Ireland. Vol. XXXIV. Edited by J. A. Scott, M.A., M.D., F.R.C.S.I.
- LAURIE, T. WERNER, London. A Mechanistic View of War and Peace. By G. W. Orle. Edited by Amy F. Rowland. Price 6s. net.
- MACMILLAN COMPANY, THE, New York. Sex Education: A Series of Lectures Concerning Knowledge of Sex in Its Relation to Human Life. By Maurice Bigelow, Professor of Biology, Vassar's College, Columbia University. Price 5s. 6d. net.
- NISBET AND CO., LTD., London. Eclipses or Empire? By H. B. Gray, D.D. Oxon., and Samuel Turner. Price 2s. net.
- PATHOLOGICAL SOCIETY OF PHILADELPHIA. Proceedings, Jan. 1915-Jan. 1916. Edited by J. A. Kolmer, M.D.
- POTNAM'S SONS, G. P., London and New York. Text-book of Materia Medica for Nurses. Compiled by Lavina L. Dock, R.N., New York State. Fourth edition.
- SCIENTIFIC PRESS, London. The Midwife's Pronouncing Dictionary of Obstetrical and Gynecological Terms. Edited by Henry Robinson, M.A., M.D. New and revised edition. Price 1s. net.
- SURGERY PUBLISHING CO., 92, William-street, New York City. American Year-book of Anæsthesia and Analgesia. By F. H. McMechan, A.M., M.D. Price \$4.00.
- TAYLOR AND FRANCIS, Red Lion-court, London. Calendar of the Royal College of Surgeons of England, 1916.
- WILLIAMS AND NORGATE, London. A Spiritual Pilgrimage. By the Rev. R. J. Campbell. Price 7s. 6d. net.
- YEAR-BOOK PUBLISHERS, Chicago. Gynecology (Practical Medicine Series, Vol. IV.). Edited by E. C. Dudley, A.M., M.D., and H. M. Stowe, M.D. Price \$1.35.

Notes, Short Comments, and Answers to Correspondents.

RISKS OF MEDICAL PRACTICE.

IN two recent trials criminal assaults committed upon medical practitioners when making professional visits to their patients have formed the subject of inquiry. In the one case there was a fatal issue. The surgeon was summoned by telegram to attend a farmer near Llansawel, in Wales, and as he entered the farm premises was fired upon with a shot-gun and wounded by the patient's son. A struggle followed, but the medical man was overmastered and killed by blows on the head. His assailant took refuge in the mountains, where he was arrested by the police after five days' search. A verdict of "Guilty but insane" was returned, and no doubt rightly, but it is a regrettable circumstance that symptoms of mental derangement that the prisoner had clearly shown before his final outbreak had not received more attention. His mother deposed that he sometimes took a gun up to a bedroom with the declared object of preventing people from entering the house to poison his father and mother, and he had a few days before threatened with his gun another medical practitioner who had been asked to attend his father. The other case referred to was that of an elderly workman at Glasgow, who violently assaulted a practitioner trying to find the house to which he had been summoned late on a Saturday night. When the doctor knocked at the door the prisoner came out of an adjoining dwelling and attacked him. He afterwards stated that he was a widower with daughters, and thought that the medical man was a person visiting the place for an immoral purpose. The Sheriff, however, does not appear to have attached much weight to this story of a mistake, for he imposed a sentence of six weeks' imprisonment with hard labour. These two instances illustrate the danger sometimes incurred by medical men, who, in the ordinary exercise of their profession, are constantly obliged to visit patients in surroundings unknown to them, and where the patient's neighbours may resent the intrusion of a stranger whose clothes proclaim him to be of a different social class from themselves. Assaults on medical men when engaged on their work are, on the whole, very infrequent.

THE PROBLEM OF THE WAR CRIPPLE.

COMMENTING on the necessity for the coöperation of technical institutions, emphasised by the Director-General of the Army Medical Service, Sir Alfred Keogh, at a recent meeting, a correspondent with a special knowledge of the re-education of disabled men suggests that something might be done by founding scholarships at institutions such as the Manchester School of Technology, in order to train officers and men of previous good education to take positions of responsibility in the chemical, textile, printing, and probably other industries. The Lord Kitchener Memorial Fund might, he thinks, be made available for this purpose.

THE PERIL OF BELGIAN CHILDREN.

Sir Charles Wakefield, who has just ceased to be Lord Mayor of London, is chairman of the British National Committee for Relief in Belgium, and has issued an urgent appeal on behalf of the 2,575,000 children held captive by the Germans in Belgium, the majority of whom have for over two years been kept alive by the humane intervention of the Neutral Commission for Relief in Belgium, of which Mr. Hoover is secretary. We may realise something of Belgium's plight when we are told that hunger, suffering, and sickness have fallen upon mother and child, that tuberculosis sanatoria are overcrowded and the waiting lists are increasing, and that rickets among younger children is becoming epidemic, but it is more difficult to picture the actual number of suffering children. It would take considerably more than two calendar months, working at the rate of 12 hours a day, including Sundays, for one man to count the number, supposing him to do so at the rate of one per second. The appeal is accompanied by the proposal that on every British dinner-table on this coming Christmas Day there shall be an "Envelope of Mercy," into which every one present may put what he or she can spare, whether pennies, shillings, or pounds. 10,000 volunteer women workers are required in London alone for the distribution of the envelopes, which can be obtained from the National Committee at Trafalgar Buildings, Trafalgar-square, or from its branches throughout the Empire. A message from the Archbishop of Canterbury, Cardinal Bourne, the Moderator of the Church of Scotland, and the President of the Free Church Council emphasises the extremity of Belgium's present distress and the dire need of further aid, especially the provision of food for little children.

"REPEAT" PRESCRIPTIONS.

FROM Nov. 1st until three months after the "conclusion of peace" "repeat" prescriptions will be recognised in panel practice in London subject to conditions framed with a view to preventing inconvenience and risk to insured persons. The conditions, it will be remembered, were originally set out in a letter addressed to the London Insurance Committee by the Commissioners, the former having been prepared to forbid the use of repeat prescriptions altogether. The conditions are to the effect that a "repeat" prescription must refer to an original prescription given during the same calendar month as the "repeat" prescription, and the reference must be to an order containing only one prescription, so that confusion may be avoided. For like reasons, the "repeat" must not modify the original in any respect, and no additional prescription may accompany it on the same order. A prescription must be given in full if the patient so requests. The "repeat" order must indicate clearly the date of the order for the prescription which is to be repeated. The above may be taken to indicate the policy of the Insurance Commissioners with regard to the use of the form "rep. mist." Its use is to be discouraged, but subject to conditions which will in any case prevent it from being used without consideration it may be employed during the present period of exceptional difficulty and stress for medical practitioners. It is, in short, to be treated as a labour-saving device justified to a modified extent by circumstances.

THE INFECTIOUSNESS (?) OF LUPUS.

THE medical officer of a private boarding school asks whether a boy who arrived at the school with an old healed tuberculous hip, scars of healed lupus on the body, and a patch of active, but not ulcerated, lupus on his face, should in the interest of the other pupils be received as a boarder. The opinion of recognised authorities on school hygiene is that the medical officer is not called upon to advise the removal of the boy from school on account of any danger of infection to the other pupils. It might, however, be desirable for æsthetic reasons, or because of misgivings on the part of pupils and their parents, to take the opposite course, and the reputation of the school has to be considered. It is probably the medical officer's duty to make this clear to the school authorities and to leave the onus of decision with them. In the present state of our knowledge there is no evidence whatever that a patch of lupus in process of being absorbed is of the slightest risk by contact to school fellows.

ALIEN ENEMIES RELIEF.

THE fourth report of the Emergency Committee for the assistance of Germans, Austrians, and Hungarians in distress, dealing with the year ending June, 1916, is a praiseworthy record of work done in connexion with repatriation, the visitation and employment of men in internment camps, and the care of women and children left behind, most of whom are of British birth. Since August, 1915, 289 children have been sent to the committee's convalescent home at Willesden or to the country for convalescence or holidays. The receipts for the year were £19,760 and the balance £4553. Donations should be sent to the honorary treasurer, Mr. W. Hanbury Aggs, 169, St. Stephen's House, Westminster Bridge, S.W.

FOR DARK NIGHTS.

IN the early days of the war we made a suggestion, which was published in our issue of Oct. 17th, 1914, that with the serious restrictions placed upon our public lighting services the kerbing of the pavement in busy thoroughfares, or at congested crossings, should be brought into bold outline by a coat of whitewash. The suggestion was ignored for some time, but now it has been very generally adopted, much to the pedestrian's convenience and safety. Now that the lighting arrangements are yet more restricted it is well worth considering whether all occupiers of premises should not be compelled to keep the kerbing in front of their premises regularly whitewashed. This would not be a very great hardship on the householder or shopkeeper, while it would confer a real benefit on the community in the dark days now rapidly approaching us. In the fog which suddenly enveloped the metropolis on Monday night last it was impossible to see where the pavement ceased and where the road boundary began. Considering the very great help which such a little thing would give, we may inquire why in everybody's interest such a precaution against the dangers of darkness should not be insisted upon. It does not appear possible for the local authorities to undertake the work, but it could easily enough be done by individuals willing, as all must be, to reduce the discomforts occasioned by the cutting off of public lighting.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Papers:—Dr. T. J. La Bromwich: The Scattering of Plane Electric Waves by Spheres.—Mr. J. Proustman, Mr. A. T. Doodson, and Mr. G. Kennedy: Numerical Results of the Theory of the Diffraction of a Plane Electro-magnetic Wave by a Perfectly Conducting Sphere (communicated by Dr. T. J. La Bromwich).—And other papers.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Nov. 21st.

GENERAL MEETING OF FELLOWS: at 5 P.M.

Ballot for the Election to the Fellowship.

(Names have already been circulated.)

Thursday, Nov. 23rd.

NEUROLOGY (Hon. Secretaries—H. Campbell Thomson, C. M. Hinds Howell): at 8 P.M.

Clinical Evening.

Anyone desiring to show cases is requested to communicate with the Hon. Secretary, Dr. Hinds Howell, 145, Harley-street, W.

Friday, Nov. 24th.

STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—A. S. Blundell Bankart, E. A. Cockayne): at 4.30 P.M.

Cases:

Dr. Leonard Guthrie: (1) Family Splenomegalic Jaundice; (2) Asclites of Obscure Origin in a Sister of above Patient.
Dr. J. Hugh Thursfield: Case of Skin Disease for Diagnosis.
Dr. F. Langmead: Case of Infantile.
Dr. Edith Bronson (for Dr. G. A. Sutherland): Case of Mycositis.
Dr. E. A. Cockayne: Hereditary Neurofibromatosis (von Recklinghausen's Disease).

Short Paper:

Dr. E. W. Scripture: Inscriptions of Speech in Cerebral Diplegia, with Indications of a New Method of Treatment.

EPIDEMIOLOGY AND STATE MEDICINE (Hon. Secretaries—William Butler, Major Greenwood, jun.): at 8.30 P.M.

Papers:

Dr. W. H. Hamer: Epidemiology of Cerebro-spinal Fever.
Capt. M. Greenwood: The Outbreak of Cerebro-spinal Fever at Salisbury in 1914-1915.

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY.—4.30 P.M., Cases sent for Consultation. Demonstration of Pathological Specimens. Exhibition of Clinical Cases. 5 P.M., Paper:—Dr. J. L. Bunch: Salvarsan and its Substitutes.

HUNTERIAN SOCIETY, at the Royal Society of Medicine, 1, Wimpole-street, W.

WEDNESDAY.—8.30 P.M., Council Meeting. 9 P.M., Paper:—Dr. O. May: The Medical Profession and the Campaign against Venereal Disease.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Course of Lectures on the Anatomy of the Human Body, for First-aid and Ambulance Students:—

MONDAY.—5 P.M., Lecture IX:—Prof. A. Keith: The Structures concerned in the Spread of Infections.

WEDNESDAY.—5 P.M., Lecture X:—Prof. A. Keith: The Anatomy of the Ear and Skull.

FRIDAY.—5 P.M., Lecture XI:—Prof. A. Keith: The More Common Accidents to the Eye and Ear.

Anatomical Preparations and Specimens used for illustration will be on exhibition in the Theatre from 3 P.M. to 5 P.M. on each lecture day, and between 10 A.M. and 5 P.M. in the Hall of the Museum on the following day.

POST GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynecological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics.—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham); Gynecological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients

(Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. O. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. O. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks). 3.30 P.M., Special Demonstration:—Dr. T. R. Whipham: Selected Cases of Children's Diseases.

THURSDAY.—2.30 P.M., Gynecological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND, 11, Chandos-street, Cavendish-square, W.

TUESDAY.—11 A.M., Educational Committee. 11.45 A.M., Parliamentary Committee. 12.15 P.M., Colonial Branches Committee. 1.45 P.M., Council Meeting. 2.45 P.M., General Meeting. Paper:—Capt. C. McDowall, R.A.M.C.: Functional Gastric Disturbance in the Soldier.

LONDON HOSPITAL, Mile End-road, E.

THURSDAY.—11 A.M., Dr. J. H. Sequeira: Early Diagnosis and Treatment of Syphilis. (Lecture I.) In connexion with this lecture Dr. J. McIntosh will give a Practical Demonstration of the Examination for Spirochetes and Wassermann Test.

ST JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—4 P.M., Dr. J. L. Bunch: Itching Skin Diseases and their Treatment.

THURSDAY.—6 P.M., Chesterfield Lecture:—Dr. M. Dockrell: The Treatment of Eczema.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

CHADWICK PUBLIC LECTURES.

MONDAY (at Hampstead Central Library, Finchley-road, N.W.).—5 P.M., Dr. J. T. C. Naah: Baby-saving for the Nation (illustrated with lantern slides).

INSTITUTE OF HYGIENE, 33-34, Devonshire-street (Harley-street), W.

TUESDAY.—4 P.M., Lecture:—Mr. E. R. T. Clarkson: The Problem of Gonorrhoea.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Stewart's Instruments.)

THE LANCET Office, Nov. 16th, 1916.

| Date. | Barometer reduced to Sea Level and 32° F. | Direction of Wind. | Rain-fall. in 24 Hours. | Solar Radio in Vacuum. | Maximum Temp. Shade. | Min. Temp. | Wet Bulb. | Dry Bulb. | Remarks. |
|--------|---|--------------------|-------------------------|------------------------|----------------------|------------|-----------|-----------|----------|
| Nov. 9 | 29.730 | W. | ... | 77 | 52 | 41 | 41 | 42 | Fine |
| " 10 | 30.240 | W. | ... | 65 | 55 | 42 | 44 | 45 | Cloudy |
| " 11 | 30.350 | W. | ... | 67 | 58 | 45 | 54 | 55 | Overcast |
| " 12 | 30.340 | W. | ... | 61 | 58 | 48 | 53 | 53 | Overcast |
| " 13 | 30.310 | S.W. | ... | 63 | 53 | 44 | 45 | 45 | Foggy |
| " 14 | 30.380 | S.E. | ... | 56 | 52 | 45 | 51 | 51 | Foggy |
| " 15 | 30.396 | N.E. | ... | 73 | 49 | 45 | 44 | 45 | Foggy |

The following journals, magazines, &c., have been received:—Edinburgh Medical Journal, Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris, Journal of Laryngology, Rhinology and Otolaryngology, Revue d'Hygiène et de Police Sanitaire, Archives de Médecine et Pharmacie Navales, British Journal of Children's Diseases, Maryland Medical Journal, American Journal of Roentgenology, La Clinique Ophtalmologique, Annales de l'Institut Pasteur, Duodecim.

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It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, and *when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

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A Consideration OF SOME OF THE MALADIES IN WHICH SPLENECTOMY MAY BE INDICATED.*

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PHYSIOLOGICALLY the spleen is of but moderate importance, and its removal does not cause serious changes in the human economy. The splenic vessels have only endothelial linings, and the blood comes in direct contact with the splenic pulp. The function of the spleen is obscure. From the fact that it contains non-striated muscle fibre, which Keith,¹ in his splendid contribution to our knowledge of the nodal system shows to be the most primitive form of control, we get an idea of its ancient heredity. We know that the cells peculiar to the spleen have phagocytic properties, that the spleen develops hæmolytic ferments, that it acts as a mechanical strainer, and that it diverts a large quantity of the blood from the general to the portal circulation for a definite purpose. The portal system of the liver has two sources: first, the gastro-mesenteric portal radicals which have to do with the metabolism of food intake; and second, the splenic portal system which has a function perhaps somewhat similar connected with the blood. It is to be remembered that the spleen derives its blood-supply from the coeliac axis, as do also those derivatives of the foregut, the liver, the stomach, duodenum, and pancreas. The fact that the spleen enlarges during the digestive period and contracts in the interval is also significant. From this somewhat scanty knowledge we conclude that the spleen removes from the blood bacteria and protozoa, toxic products and worn-out blood corpuscles, especially erythrocytes, and sends all this material to the liver for destruction of the noxious agents and for conversion into tissue-building substances of such food elements as it may contain. While the spleen has been classified with the organs of internal secretion, there is little to substantiate the hypothesis that it possesses an important internal secretion. Organs of internal secretion are of two general types: First, those so closely associated with the sympathetic nervous system that they act in some respects as one organ—for example, the adrenals and hypophysis—and in which the internal secretions affect the tissues largely through the sympathetics; and second, those producing an internal secretion which is carried through the blood stream and acts in the body cells directly like the thyroid secretion in metabolism (Plummer,² Kendall³). It is interesting to note that most of the organs whose internal secretion acts to a great extent through the blood stream were originally external secretory glands like the thyroid, or still possess an external as well as an internal secretion like the pancreas, testicles, &c.

Pathologically the spleen is of very great importance. It is a link in a chain of organs which, under conditions of disease, produces changes in the blood that may eventually cause death. However, the spleen constitutes only a single weak link in the chain, a link which may be removed. In many instances its removal breaks up a vicious circle, and the patient is thus restored to health even though the spleen itself may be only the agent of destruction rather than its cause. This conception of the function of the spleen brings into the foreground its relation to the pathology of the blood as a tissue—a tissue composed of leucocytes, erythrocytes, and platelets, the plasma of the blood having the relation of connective tissue.

One hundred and thirty-five splenectomies have been performed in the Clinic for various conditions. There were 12 deaths, a mortality of 8½ per cent. This takes into account all deaths that occurred in the hospital after splenectomy without regard to their cause or the length of time they occurred after operation. This method of computation works

some hardships, but it seems to be necessary in order that our statistical values may have a common basis. While the function and pathology of the spleen is more or less obscure, the outstanding fact in these cases was that, with one exception, the spleen was enlarged and the enlargement concerned those pathologic states with which it was associated.

The enlargement of the spleen may at times be a work-hypertrophy, such as occurs in hæmolytic jaundice. In other cases, as in pernicious anæmia, the spleen may have been stimulated to pernicious activity. In splenic anæmia the blood destruction originates perhaps within the spleen itself as a result of those agents which cause the enormous growth of fibrous tissue in the spleen and the terminal cirrhotic process in the liver. As the blood picture is not characteristic the estimation of the relation of the spleen to these various disorders depends largely on our ability to ascertain the physical condition of the spleen. Unless the spleen is enlarged we have at present no evidences which necessarily denote splenic disease.

A somewhat careful investigation as to the value of percussion in detecting enlargement of the spleen not sufficiently marked to be discovered by palpation does not give percussion as high a place as we have been led to believe it held. On many occasions I have carefully mapped out what I concluded to be the area of splenic dullness by percussion and on opening the abdomen found I had been greatly deceived. Much of the belief in the accuracy of outlining the spleen by percussion has been due to the fact that this method was employed in such diseases as typhoid and malaria in which enlargement of the spleen was found after death. In the large majority of cases little real knowledge of the physical condition of the spleen will be obtained unless it can be felt by careful palpation on full inspiration with the patient lying on the right side. This is unfortunate, as the spleen must be enlarged several times its normal size to become palpable. Carman is now developing roentgenologic evidence as to splenic enlargement which, it is hoped, will produce reliable information.

For convenience the diseases with which the spleen is concerned may be roughly classified into three groups: (1) Splenomegalias of parasitic origin; (2) splenomegalias of probably toxic origin associated with anæmia and cirrhosis of the liver; and (3) splenomegalias associated with blood dyscrasias.

Splenomegalias of Parasitic Origin.

Under normal conditions parasitic agents collected in the spleen are sent to the liver for destruction, the spleen appearing to have little germicidal power. Should parasites accumulate beyond the ability of the spleen to rid itself of them, such secondary conditions occur as are shown in the splenomegalias of typhoid, malaria, syphilis, tuberculosis, and other infections. Eventually such cases may come to operation because of the failure of medication to reach the organisms sequestered in the spleen which have a constant tendency to reinfect the whole body.

A study of the sequestration of parasites in the spleen has many interesting features. We must believe that a certain number of bacteria gain entrance to the blood, but that in health they are eliminated in various ways, many being removed from the blood stream in the spleen and destroyed in the liver. Adami⁴ has shown that bacteria are constantly picked up in the duodenum and upper jejunum and sent to the liver for destruction, and that the pigmented areas frequently seen in the liver at post mortem are the result of collected pigment from slaughtered bacteria. Bacteria in the blood are derived from various sources. Eccles⁵ in commenting on the power of the body cells to resist bacterial invasion calls attention to the fact that such resistance is a response to the action of bacteria that are early introduced into the blood stream, and that an early introduction of bacteria, such as occurs in some instances through the tonsils, is essential to the development of this defence. If this is true the tonsils and kindred organs may on occasion assume the rôle of immunisers, permitting just a sufficient number of bacteria to enter the circulation at an early stage of the infection to develop resistance to the specific organism. Vaughan⁶ points out that typhoid infection of the body is present during the prodromal period, and that what we call typhoid fever is the defence manifestation set up as the result of this infection, the period of incubation being the time necessary to educate the body cells to resist the typhoid

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bacillus. From this standpoint it may be said that bacteria circulating in the blood at times have a definite value. Must we believe that all the blood of the body passes through the spleen in a haphazard manner in order to strain out the bacteria, or does the spleen have a definite attraction for certain types of bacteria? Rosenow's⁷ extraordinary work showing the specificity of bacterial infection would lead us to believe that the spleen specifically attracts to it from the blood stream the various bacteria and toxic agents which it is its function to gather up for elimination.

While we have seen a number of cases of typhoid splenomegalias and operated on several typhoid abscesses of the spleen, none have required splenectomy. We have not seen a case of the ague cake of malarial plasmodium requiring operation, although Jonnesco⁸ has reported a number of splenectomies for this condition in which the operation was necessary because of inability to destroy the plasmodium in the spleen and relieve the chronic cachexia and anæmia by medication. Jonnesco's mortality was high, but the patients who recovered from the operation were cured.

We have had but one case of probable primary tuberculosis of the spleen—that of a young girl in whom there was no other evidence of tuberculosis at the time of the operation, but who died within six months of generalised tuberculosis. We must believe it possible, therefore, that the splenic condition was but the dominant feature of an unrecognised dissemination of tubercle bacilli.

Four patients have been splenectomised for syphilitic splenomegalia. Three had definite histories of lues, all had positive Wassermanns, and spirochaetes were found in the removed spleens in two cases. Two spleens contained a few small typical gummas. In three cases gummas were found in the liver. The patients were markedly anæmic and had failed to improve satisfactorily under salvarsan, neosalvarsan, and prolonged mercurial treatment. Removal of the spleen was followed immediately by an extraordinary improvement in the anæmia. After operation the patients were again placed on antisyphilitic medication and their recovery was prompt and permanent.

For splenomegalias of pyogenic origin we have removed the spleen nine times, with one death. These cases will be reported in detail later.

Splenomegalias of Toxic Origin Associated with Anæmia and Cirrhosis of the Liver.

The splenomegalias in this group were due evidently to toxic products which had been removed from the blood and which, passing to the liver, evidently produced hepatic cirrhosis. We infer that such toxins are filtered out in the spleen and we know that in certain diseases removal of the spleen not only cures the anæmia but tends also to check the progress of the cirrhotic process in the liver such as occurs in Banti's disease.

It appears that Nature has several methods of destroying toxic agents, among them being absorption, elimination, and encapsulation. It may be that the latter of these processes is active in cirrhosis of the liver. The spleen collects from the blood and distributes through the radicles of the portal vein certain toxic products which for a time, in the earlier stages of the disease, the liver is able to destroy and eliminate. When it fails in this elimination the diffused poisons are encapsulated, this diffuse encapsulation resulting in portal cirrhosis. It is probable that most toxic agents which act as causes of portal cirrhosis—alcohol, for example—are derived through the mesenteric portal system, but sufficient evidence is now at hand to show that the same process may be set up by agents derived from the spleen, and that the occurrence of splenomegalia in connexion with portal cirrhosis may indicate a relationship between the splenomegalia and the causation of the cirrhosis. Another view in regard to the splenomegalia is that it is compensatory to the hepatic failure, but as the removal of the enlarged spleen in the recorded cases appears to have done no harm in any of the types of hepatic cirrhosis, and often resulted in great good, the former hypothesis appears the more reasonable.

Clinically, splenic anæmia is the best-understood member of this group, but it rests on an insecure pathologic basis. There are many varieties. An enlarged spleen and the secondary type of anæmia, however, are more or less characteristic, although the anæmia may be absent for long intervals.

Gaucher's disease is usually included in the splenic anæmia group. Brill and Mandelbaum,⁹ however, point out that it could be classified more naturally with new growths, as it is essentially a disease of endothelial characteristics. Herzog¹⁰ points out that the anæmia which results from Gaucher's disease is characteristic of splenic anæmia, but admits that after death from Gaucher's disease the peculiar endotheliomatous growths are found in the liver and other organs. When the spleen was removed before these terminal changes appeared, the patients were cured, as occurred in cases cited by Herzog and also in our experience. Gaucher's disease usually begins before the thirteenth year and runs a chronic course, often lasting 25 years or more.

Von Jaksch's disease, anæmia pseudoleukemica infantum, according to Giffin,¹¹ is probably best classified with splenic anæmia, the high white-cell count and lymphocytosis being due to a peculiar reaction of the infant's blood. While the milder types of von Jaksch's disease are usually cured by general treatment, splenectomy is required for the more severe types.

There is less evidence to indicate that a splenomegalia peculiar to it may be a cause of biliary cirrhosis, but the results in the few cases of splenectomy we have performed in cases of biliary cirrhosis have led us to believe that to a certain degree it has a definite relation to the hepatic condition and that the latter may be favourably modified, at least in some cases, by the removal of the spleen.

In splenic anæmia the spleen is enlarged, and thus its power of destroying red cells is increased as is shown by the increase of hæmatin and the relative increase of leucocytes in the splenic vein. There is also a great increase of connective tissue in the spleen, which may be the result of some toxic stimulant. Secondary cirrhosis of the liver, which completes the syndrome of splenomegalia and anæmia as described by Banti, represents a late stage of the process. In all, we have done 43 splenectomies for splenic and allied anæmias (Gaucher, von Jaksch's disease, &c.). Five of the patients died. The mortality in this group was too high, and represents badly chosen cases in our earlier experience; it can be readily reduced to 5 per cent. The improvement that takes place on removal of the spleen in successful cases is surprising. Even in late stages of the condition in which there is marked cirrhosis of the liver the patients may be apparently cured. It would seem that the great power of the liver in regenerating its specific cells must be utilised to the full extent to produce the improvement which occurs after splenectomy for advanced Banti's disease.

In several of our cases of splenectomy for splenic anæmia in which there was marked splenomegalia with advanced cirrhosis of the liver and ascites the patients were restored to health—in one instance now for more than seven years. One of the typical features of splenic anæmia is the occurrence of hæmorrhages from the stomach. Possibly 75 per cent. of all the severe hæmorrhages from the stomach do not have their origin, as is so frequently thought, in peptic ulcer, but arise from some unknown gastrototoxic condition. They occur more often in adult males. Usually there are no previous symptoms, gastric or otherwise, and after recovering from the hæmorrhage, which may have been very severe, the patient becomes symptomatically well. These hæmorrhages markedly resemble those which occur in splenic anæmia. Some authorities believe they are the result of unrecognised cirrhosis of the liver, though not necessarily from the rupture of enlarged veins. In several cases of gastric hæmorrhage in which we explored the stomach during the period of bleeding widespread superficial changes in the gastric mucosa, but no peptic ulcers, were shown. Armstrong¹² has reported similar cases in which he was able to check the hæmorrhage by passing a hot iron over the bleeding surfaces. In none of the reported cases, however, was the condition of the spleen mentioned. In a very remarkable instance of this kind in which the patient had had a number of operations for gastric hæmorrhage, with recurrence of the hæmorrhage whenever the hæmoglobin rose above 45 per cent., Balfour¹³ explored the spleen and found that it was more than twice the normal size. In the liver were some slight changes which might be regarded as a possible early cirrhosis. The spleen was removed; the man gained 60 pounds in weight; his hæmoglobin rose above 80 per cent., and he has been in perfect health for one year. In Balfour's opinion many cases of hæmorrhage from the stomach of unknown causation may be of splenic origin, and he suggests that in all operations for gastric hæmorrhage the

condition of the spleen be noted, since in this way valuable data may be accumulated. It is quite possible that up to the present time we have been recognising as splenic anemias only those gross conditions which may be the terminal stages of a more frequent malady.

The resemblance between splenic anemia with terminal portal cirrhosis of the liver, and those cases of portal cirrhosis in which the enlargement of the spleen is apparently secondary to the cirrhosis, has led us to remove the spleen in three selected cases of advanced portal cirrhosis with splenomegalia, ascites, &c. In one instance it was impossible to tell from the history or physical examination of the patient whether the portal cirrhosis was primary and the splenomegalia secondary, or the reverse. The operations are too recent for any conclusions, but the patients who recovered showed a remarkable improvement of the anemia and a lessening or disappearance of the ascites, and from a wholly incapacitated state are now in fair health. In three instances we removed an enlarged spleen associated with biliary cirrhosis. These persons were moderately jaundiced, and had large livers and spleens. Their condition has been very greatly improved, and they have been able to return to work, though two still have slight jaundice. One is apparently cured. One of these cases may have been confused with Hanot's cirrhosis, if there be such a pathologic entity.

Splenomegalias Associated with Blood Dyscrasias.

In foetal life the spleen, the bone marrow, the lymphoid and adenoid structures of the body, and probably the liver, are concerned in the formation of blood. The most primitive blood is white blood, the white cells descending from the mesenchyme cells and the red cells derived from the white cells. All animals having but one kind of blood have white blood. The earliest foetal blood is white. Leukemia has been regarded as a cancer of the white-blood tissue—an uncalled-for, functionless production of embryonic cells in which all the original blood-forming organs take part—just as sarcoma concerns embryonic connective-tissue cells and carcinoma concerns embryonic epithelial cells. Leukemia varies greatly according to the particular group of organs in which the diseased blood production is most marked. However, clinical evidence that cannot be ignored has been brought out recently which at least leads to the conjecture that leukemia may be more definitely connected with certain organs than we have been led to believe. In splenomyelogenous leukemia, for instance, the application of the X ray over the spleen at first acts most beneficially in reducing its size, decreasing the white cells, and improving the anemia, but later the ray loses such power. Radium applied at several points over the spleen has a much more rapid effect than the X ray. In several cases in our experience applications of radium caused so great a reduction in a huge spleen within a month that it could not be felt beyond the margin of the rib. Coincidentally the white cells dropped from several hundred thousand to less than 10 000. Our experience with the X ray in the treatment of splenomyelogenous leukemia does not indicate that these spleens so markedly acted on by radium will remain permanently in abeyance. It is to be noted that after the improvement produced by the X ray ceases enlargement of the spleen again takes place coincidentally with the increase in the white cells. This leads to the question as to whether or not, during the period of abeyance, splenectomy might not have had a further effect in extending the palliation in certain types of disease allied to splenic leukemia.

An experience with a case recently is at least suggestive:—

CASE 171009.—A woman, aged 56 years, suffering from splenomyelogenous leukemia, with the usual blood picture, was admitted to the clinic for examination on Sept. 15th, 1916. White blood cells 203,000. The spleen filled the left half of the abdomen. Over the splenic area was an X ray dermatitis. The history developed the fact that X ray treatment had at first been of much benefit. The spleen was markedly reduced in size and there was a great reduction in the number of white cells and improvement in the patient's general condition. Later the X ray lost its effect, the spleen rapidly increased in size, the leucocyte count went up, and the patient's general condition went down. The spleen, weighing 1100 gm., was removed. The outer portion of the organ was somewhat sclerosed, evidently the result of the treatment. Possibly this outer sclerosis prevented further effect from the X ray on the hyperplastic splenic pulp sequestered in the middle of the organ. The leucocytes dropped from 203,000 to under 50,000 in the first ten days after the operation.

We must anticipate that this patient will eventually die with leukemia. A study of the future course of the disease will be interesting. Several patients in our experience in whom the spleens were large and the white blood cells up to 30,000 and who had been diagnosed and treated as leukemic were cured by splenectomy. I do not wish to be understood as recommending splenectomy as a cure for leukemia, but it seems consistent, especially when we remember our fogging of mind in regard to the early leukemic state, that in selected cases of this type splenectomy may be considered after the application of radium and during the period of great improvement.

Pernicious anemia has been pictorially spoken of as a cancer of the red-cell tissue. Post-mortem examinations have usually shown that the spleen is not enlarged after death from pernicious anemia; that, if anything, it is atrophic. Therefore, it has been assumed that the organ does not have anything to do with pernicious anemia, although in many reported cases it was distinctly enlarged. In the cases in which we have removed the spleen for pernicious anemia it was found enlarged from two to ten times its normal size, with one exception. In this case the patient was in a terminal condition, and the spleen was slightly atrophic (187 gm.; normal 195 gm., Sappey). This suggests that the shrunken spleen found at post-mortem is a terminal condition.

Previous to the time of Eppinger's¹⁴ reports the spleen was removed in a number of instances of pernicious anemia under a mistaken diagnosis. In one of our patients in whom the spleen was large, the anemia marked, and the blood lacking in pernicious cell characteristics, the spleen was removed under the impression that the disease was splenic anemia. This patient lived in fair health for three years and died from an intercurrent malady. Before death, the condition was proved to be pernicious anemia by the development of a typical blood picture.

That pernicious anemia in any great percentage of cases depends entirely on splenic disease I do not believe can be held, but clinical experience has proved that the spleen may be a factor of considerable importance. The removal of the spleen in suitable cases after the failure of other therapy has given rise to prolonged betterment, but splenectomy does not seem to prevent the development of cord changes, nor do the pernicious cells entirely disappear from the blood. Eppinger believes that these manifestations are terminal, and that if the spleen is removed sufficiently early they will not appear. The time of observation is as yet too short to warrant speaking with any degree of authority as to what the ultimate possibilities of splenectomy in the therapeutics of pernicious anemia may be. It has been said that if the spleen is the mother of pernicious anemia, there must be many fathers.

In 48 cases of pernicious anemia in which we removed the spleen there were 3 deaths. I am convinced that the deaths were unnecessary, as none occurred in the last 29 operations. The patients who died were in an advanced stage of the disease and were operated on during crises without transfusion. In the operations performed when the patients were on the up grade or when we were able to start the up grade by transfusion there were no deaths. Miller¹⁵ says that the removal of the spleen may act either by stimulating the bone marrow or by increasing the resistance of the erythrocytes.

To Giffin, who has paid most careful attention to these cases, the writer is indebted for the following summary of the indications for splenectomy in pernicious anemia.

"There is no evidence that splenectomy has cured pernicious anemia. A review of 48 cases of splenectomy for pernicious anemia demonstrates a definite gain in the blood, the weight, and the general condition during the first three months of the post-operative period in 78 per cent. of the cases; during the second three months period, 68 per cent. of the living patients maintained their gain. A consideration of the advisability of splenectomy would seem to be warranted at present chiefly in young and middle-aged patients of good general resistance, who show evidence of active hemolysis and in whom the spleen is moderately enlarged. The estimation of the blood-derived pigments in the duodenal contents is valuable in determining the degree of hemolytic activity present at a given time. A comparison of the degree of hemolysis with the severity of the anemia would seem to be indicative of the productive power of the bone marrow. Pre-operative treatment, especially transfusions, should be employed to influence the patient's

general condition and to improve the characteristics of the blood picture. The operative risk is increased when the hæmoglobin is below 35 per cent. and the erythrocyte count less than 1,500,000. Post-operative transfusions have not been given as a routine procedure, but transfusions have been successfully employed in post-operative relapse."

Hæmolytic jaundice presents a brighter picture than pernicious anæmia, and with splenic anæmia represents the triumph of splenectomy. It would appear that the function of breaking down worn-out corpuscles is exercised by the spleen in response to some condition of the red corpuscle itself. It has been shown that the cells peculiar to the spleen have phagocytic properties, but in most careful investigation Herzog was never able to find red cells engulfed by splenic cells. The ferment theory, therefore, appears to fit the conditions best, although it is a question whether such ferments are produced in the spleen or carried to the spleen to produce their effect. Chauffard and Vidal¹⁶ have shown that in hæmolytic jaundice the red corpuscles are more fragile than normal, as they circulate in the blood, and their fragility is apparently their death-warrant in the spleen. Some organ or tissue in the body places the death-sign on the red corpuscles and the spleen obeys the command. The hypertrophy of the spleen under these circumstances is possibly to be looked upon as a work-hypertrophy. Certain it is that the removal of the spleen in hæmolytic jaundice institutes most marvellous improvement and speedy cure. The jaundice, which may have existed for years, or possibly for life, entirely disappears within a few days, and the anæmia, which is of the secondary type, disappears within two or three weeks.

Hæmolytic jaundice is of two types, the acquired type of Hayem and Vidal, and the familial or congenital type of Minkowski. The former is the more serious, and usually leads to death. The latter may exist for years or for a lifetime, the patients maintaining a fair degree of health, although suffering at times from an exacerbation of slight permanent jaundice accompanied by tenderness in the region of the enlarged liver and spleen, headache, malaise, and moderately increased temperature. The acquired type of hæmolytic jaundice has probably been confused with biliary cirrhosis, and there are reasons to believe that many patients supposed to be suffering from the hypertrophic cirrhosis of Hanot, a disease lasting from six to ten years and most frequent in the adolescent period, in reality have hæmolytic jaundice. The enlarged spleen and liver of hæmolytic jaundice lends itself readily to such confusion. This confusion should no longer exist unless there are gall-stone complications, for in hæmolytic jaundice bile is found freely in the stool but not in the urine. Examination of the peripheral blood discloses an increased fragility of the red cells, and Schneider's¹⁷ test of the duodenal contents removed through the duodenal tube shows urobilinogen and urobilin in excess. Unfortunately, however, gall-stones are very frequently present, perhaps because of an increased viscosity of the bile, and may give rise to colics, cholangitis, biliary obstruction, &c.

The choice of time for splenectomy in hæmolytic jaundice is of importance. Of 13 cases we lost but one, this being a patient who was operated on during crisis. For our knowledge of hæmolytic jaundice we are greatly indebted to the work of Elliott and Kanavel.¹⁸

To sum up, it may be said that splenectomy is a curative measure in properly selected cases of splenic anæmia, hæmolytic jaundice, and allied states, and that it may be curative in certain as yet little understood conditions which are confused with pernicious anæmia, leukæmia, and cirrhosis of the liver. Splenectomy is of value in certain types of parasitic splenomegalia—notably, malaria and syphilis. It is of value for the palliation of some types of pernicious anæmia. In portal and biliary cirrhosis associated with splenomegalia splenectomy may have a field of usefulness, but there has not been sufficient experience with it in these conditions to furnish reliable data. In true leukæmia splenectomy does not appear to have standing, but in connexion with the use of radium it is at least to be considered.

The technique employed in the Clinic for splenectomy has been recently described by Balfour,¹⁹ and it will not be necessary to lengthen this discussion by further reference to it.

In conclusion, I wish to emphasise the fact that traditional medicine has named many diseases from symptom

complexes. Patients are more or less carefully observed, a few blood cells and a little plasma are examined at various times, the patients die and we assume that the condition found after death existed during life. The history of medicine is a graveyard of such beliefs. The spleen is one of the latest of the hidden organs to be brought under the eye and investigated during life and in the early stages of the disease. We find that the problems presented are not simple, but rather very complex. In the early stages splenic anæmia may be confused with pernicious anæmia, cirrhosis of the liver, hæmolytic jaundice, and leukæmia. We remove the spleen and say we have cured any one of the diseases we may have fixed upon to designate the condition, but does that make it true? Where is the dividing line between hæmolytic jaundice, Hanot's cirrhosis of the liver, and some types of pernicious anæmia? In the terminal stages we recognise the name of the end-results, but to determine the nature of the disease in the early and curable period requires investigation of the spleen, liver, bone marrow, and blood during life. To do this judiciously, we must divest ourselves of accumulated prejudices which are the result of a nomenclature based on symptoms.

References.

1. Keith, A.: A New Theory of the Causation of Enterostasis, Cavendish lecture, *THE LANCET*, 1915, ii., 371-75.
2. Plummer, H. S.: The Function of the Thyroid, Normal and Abnormal, *Tr. Assn. Amer. Physicians*, 1916.
3. Kendall, E. C.: Studies of the Active Constituent, in Crystalline Form, of the Thyroid, *Tr. Assn. Amer. Physicians*, 1916.
4. Adami, J. G.: On Latent Infection and Subinfection and on the Etiology of Hæmachromatosis and Pernicious Anæmia, *Jour. Amer. Med. Assn.*, 1899, xxxiii., 1509-14, 1572-76.
5. Beclès, R. G.: The Tonsils and the Struggle for Existence, *Med. Rec.*, 1915, lxxxviii., 47-56.
6. Vaughan, V. C.: Infection and Immunity, Commemorative Volume, *Chic. Amer. Med. Assn.*, 1915, p. 164.
7. Rosenow, E. C.: Elective Localisation of Streptococci, *Jour. Amer. Med. Assn.*, 1915, lxxv., 1687-91. Elective Localisation of Bacteria in Diseases of the Nervous System, *Ibid.*, 1916, lxxvii., 662-65.
8. Jonnesco, T.: Splénectomie pour Hypertrophie Malarique, *Bull. et Mém. Soc. de chir. de Bucarest*, 1901-2, iv., 58. Deux cas de Splénectomie pour Hypertrophie Malarique, *Ibid.*, 64p.
9. Brill, N. E., and Mandelbaum, F. S.: Large-cell Splenomegaly (Gaucher's disease): a Clinical and Pathological Study, *Am. Jour. Med. Sci.*, 1913, cxlvi., 863-83.
10. Harris, M. L., and Herzog, M.: Splenectomy in Splenic Anæmia or Primary Splenomegaly, *Ann. Surg.*, 1901, xxxiv., 111-134.
11. Giffin, H. Z.: Splenectomy for Splenic Anæmia in Childhood and for the Splenic Anæmia of Infancy, *Ann. Surg.*, 1915, lxxii., 679-87.
12. Armstrong, G. F.: Personal communication.
13. Balfour, D. C.: Splenectomy for Repeated Gastro-intestinal Hemorrhages, *Ann. Surg.*, 1916, lxxiv.
14. Eppinger, H.: Zur Pathologie der Milzfunktion, *Ber. Klin. Wchnschr.*, 1913, i., 1509-12, 1572-6, 2409-11.
15. Miller, J. L.: Splenectomy in Splenic Anæmia, Hæmolytic Icterus, and Hanot's Cirrhosis, *Jour. Amer. Med. Assn.*, 1916, lxxvii., 727-30.
16. Chauffard, A.: Pathogénie de l'Ictère Congénital de l'Adulte, *Sem. Méd.*, 1907, xxvii., 25-29; Les Ictères Hémolytiques, *Ibid.*, 1908, xxviii., 49-52; Cholestase Pigmentaire dans un cas d'Ictère Congénital hémolytique; Analyse Chimique des Calculs, *Bull. et Mém. Soc. Méd. d'Hôp. de Paris*, 1912, xxxiv., 80. Vidal, F.: Ahrani, P., and Bruck, M.: Différenciation de Plusieurs Types d'Ictères Hémolytiques, *Presse Méd.*, 1907, xv., 641-44. Cited by Elliott and Kanavel, l.c.
17. Schneider, J. P.: The Splenic Pathology of Pernicious Anæmia and Allied Conditions, *Arch. Int. Med.*, 1916, xlvii., 32-41.
18. Elliott, C. A., and Kanavel, A. B.: Splenectomy for Hæmolytic Icterus, *Surg., Gynec., and Obst.*, 1915, xxi., 21-37.
19. Balfour, D. C.: Technic of Splenectomy, *Surg., Gynec., and Obst.*, 1916, xliii., 1-6.

PROPOSED SCHOOL OF MEDICINE FOR THE SUDAN.

Lord Cromer is promulgating an appeal issued by Sir F. Reginald Wingate, Governor-General of the Sudan, to found a permanent memorial to the late Lord Kitchener in Khartoum, and the form which is designated for the memorial will ensure the movement medical and scientific support. It has been decided that a school of medicine should be affiliated to the Wellcome Tropical Research Laboratories, and thus become part of the Gordon Memorial College. Students who have passed through that institution will therefore be fitted to serve as officers in the Egyptian Army Medical Corps, as officials in the medical department, and as general practitioners in that country. Lord Kitchener's association with the Anglo-Egyptian Sudan formed a most important section of his splendid career, and the appeal of the Sirdar should certainly secure sympathetic welcome. Subscriptions to the memorial should be forwarded to Mr. Baldwin S. Harvey, honorary secretary, Gordon Memorial College, 67, Lombard-street, London, E.C., and communications on the matter should be addressed to Mr. C. J. S. Thompson, honorary secretary, "Lord Kitchener Sudan Memorial," 54A, Wigmore-street, London, W.

In Address ON THE MEDICAL PROFESSION AND THE CAMPAIGN AGAINST VENEREAL DISEASE.

Delivered before the Hunterian Society on Nov. 22nd, 1916,

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VENEREAL DISEASES.

MR. PRESIDENT AND GENTLEMEN.—Since the publication early this year of the Final Report of the Royal Commission, the campaign against venereal diseases has developed into a national movement of outstanding importance. The opening of the campaign has been in every way auspicious, but to bring it to a satisfactory issue—that is, to succeed in practically stamping out these diseases—is a task requiring the effective coöperation of many agencies and classes, particularly the wholehearted support of the medical profession. The object of this paper is to indicate the lines on which such support may be most advantageously given by the medical men in the various branches of the profession.

It may be well to begin by a brief sketch of the lines along which the campaign is to be pursued. Broadly speaking, the two chief objects to be attained are: (1) Education of the general public in the significance of the diseases, their racial and economic effects, the importance of thorough and early treatment, and the dangers of neglect; (2) the provision of wide facilities for the free diagnosis and treatment of the diseases by modern methods. In many quarters considerable criticism has been evoked by the decision of the Commission not to recommend compulsory notification at the present time. This question will be touched upon in another part of the paper.

EDUCATION.

It is quite obvious that provision of free treatment will fail to achieve its object unless the public are alive to the importance of seeking it at the earliest manifestations of disease. At the present time the subject is still, in many quarters, veiled in most undesirable mystery, as though there were something contaminating in the very mention of the words, "venereal," "gonorrhoea," and "syphilis." Could anything be more ridiculous and hypocritical than the attitude of many of the lower-class daily and weekly newspapers, which glory in detailed accounts of pornographic or sensational police-court cases, but cannot be prevailed upon to refer to venereal diseases, except by some catch-phrases like "hidden plague" or "social disease"? Medical men should take every opportunity of impressing on those responsible for the conduct of these papers the error of their ways and the importance of free ventilation and discussion of the subject, particularly in the papers having a wide circulation among the lower classes.

Another serious shortcoming of many of these papers is the wide hospitality offered by their columns to advertisements of quack medicines, including many obviously meant to attract sufferers from gonorrhoea and syphilis, advertisements productive of great profit to the papers and the quacks and of enormous harm to the unfortunate victims. I have strong hope that a serious effort will shortly be made to introduce legislation forbidding the advertising of any patent remedies for these diseases or their treatment by unqualified practitioners. Unfortunately, there are many strong vested interests opposed to such legislation, and every medical man should do all in his power to assist its passage by instructing any Members of Parliament he may know on its importance and by bringing before them cases he may come across of the evil results of quackery.

Many of the better-class papers, both dailies and weeklies, have opened their columns to free discussion of the subject. There are, however, still many important provincial centres where nothing of this sort has yet been done, and no opportunity should be lost by doctors in these centres of promoting and carrying on propaganda work of this nature.

A most important educational aspect in which the medical profession can render unique service is that of the adolescent. At the present time the vast majority of both sexes are left to find out the facts of sex hygiene and venereal disease in a casual way, often through most undesirable channels. A great deal can, and should, be done by school-teachers in instruction of this sort, but it is my firm conviction that such teaching would be far more effective if undertaken by the family doctor. He should make a custom of introducing the subject to the parents, pointing out to them its importance. In the great majority of cases parents are averse from, and indeed often incapable of, tackling the question, and will gladly accept an offer from their medical attendant to talk the matter over sensibly and frankly with their children of suitable age. If this suggestion were widely adopted, there would be an end to those tragic episodes of boys and girls contracting venereal diseases in actual ignorance of their existence.

Though such instruction may be expected to enlighten the children of to-day and to-morrow, it has been painfully lacking in the past, with the result that a very large majority of the young men and women of the present have grown up in dark ignorance. The National Council for Combating Venereal Diseases, recognising this, is engaged in an attempt to repair this deficiency. In the case of young men, the fact that a very large proportion are now in the ranks of the Army affords an excellent opportunity for their instruction, and with the consent and assistance of the Army authorities, a large number of lectures have been given to troops on the subject of venereal diseases. Up to the present time, nearly 900,000 men have been addressed, but the work is hampered by the lack of sufficient lecturers. If any medical man feels able to help in this important work, the National Council will be pleased to hear from him.

Considerable progress has also been made in the enlightenment of young women by courses of lectures by medical women to women "social workers" in various towns, and in a few cases by similar lectures direct to the women employees of large business houses. It is hoped to extend this work more widely in the near future.

ORGANISATION OF TREATMENT.

Most medical men are, I assume, aware of the general outline of the Government scheme for giving effect to those recommendations of the Royal Commission dealing with the provision of facilities for the free diagnosis and treatment of venereal diseases. In July of this year the Local Government Board issued an "Emergency Order" that each borough and county council should proceed forthwith to draw up and submit to the Board for approval a scheme for the organisation of clinics for this purpose. As regards finance, 75 per cent. of the cost is to be borne by the Treasury and 25 per cent. by the local authority. It should be noted that the execution of an "Emergency Order" is not left to the discretion of the local authority: it is compulsory.

The principal requirements demanded of local schemes include: (a) Arrangements for enabling any practitioner in the given area to obtain at the cost of the council a report on any material he may submit from a patient suspected to be suffering from venereal disease. (b) Provision for the treatment at hospitals or other institutions of persons suffering from venereal disease. (c) Provision for the supply, under certain conditions, to medical practitioners of salvarsan or its substitutes.

It is suggested that, for any given area, the medical officer of health should, in consultation with the medical staff of the available hospitals and pathological laboratories, organise such a scheme. More recently, as the result of representations of the British Medical Association, the Local Government Board has suggested to the councils that the committee entrusted with the preparation of their scheme should avail itself of the advice of representatives of the local medical practitioners.

Establishment of Clinics.

An essential factor in the success of the scheme is the coöperation of the voluntary hospitals. It is imperative that the clinics should be, not separate institutions, but departments of hospitals, so as to avoid the stigma which would undoubtedly deter patients from using them. It is probable that, for various reasons, many hospital committees will hesitate about coöperating in this way. Some of them still

regard venereal disease as an unclean thing beyond the pale of their legitimate scope, while others are apprehensive lest the receipt of a Government grant should expose them to the danger of unwarrantable interference with their administration. On the latter point the Local Government Board Memorandum makes it clear that, subject to the fulfilment of certain conditions as to treatment and returns relating to cases treated, there will be no interference with the hospital administration. As regards the former point, its irrelevance is patent to anyone realising the extent to which hospital accommodation is taxed by the treatment of the later manifestations of the diseases, not to mention the frequency of "innocent" cases. It is essential, therefore, that in the case of such hospitals the medical staff should do all in their power to persuade the committee to fall into line by participation in the local scheme.

Assuming that the coöperation of the local hospitals and pathological laboratories has been duly obtained, the next difficulty will be the provision of a medical officer to the clinic, one with "a satisfactory experience in venereal diseases and knowledge of modern methods of diagnosis and treatment." At the present time, with so few men available, this question of staffing the clinics is indeed a perplexing one, and its solution will tax the ingenuity of those responsible. In the case of the large towns, particularly those with medical schools, the difficulty should not arise if the local specialists adopt a helpful attitude, but in other cases it may perhaps be necessary to utilise the services of a less expert practitioner until the termination of hostilities releases the large number of medical men who will have gained a wide experience in the modern methods of diagnosis and treatment.

The establishment of clinics, the organisation of treatment, and the education of the public form, however, only the first step in the campaign. There remains the problem of attracting to them the sufferers from these diseases. The various ways in which patients may utilise these facilities may be summed up as follows: (a) He (or she) may come direct of his own accord to the clinic. In certain circumstances—e.g., if he seems well able to afford to pay for treatment—he might be advised to go to a private doctor, but should he prefer to avail himself of the clinic's free treatment he is quite entitled to do so. (b) He may be referred to the clinic for treatment by his private or panel practitioner. (c) He may be brought to the clinic for consultation or for special treatment (e.g., salvarsan), his private practitioner retaining the general treatment of the case. (d) The practitioner may obtain reports on specimens or supplies of salvarsan, &c., without the patient having any direct dealing with the clinic.

The Position of the Doctor.

It is, of course, impossible at the present time to form any estimate as to the relative numbers of patients in these four groups. In the case of other diseases, it might be safely assumed that a very large proportion would in the first place seek advice from their own doctor, but the "moral stigma" in the case of venereal diseases may quite likely operate in the direction of impelling many of them to go straight to the clinic, particularly when it is realised that there will be no danger of any publicity. Experience alone will clear up this point, but what is quite obvious is the essential importance of the general practitioner availing himself of the existence of these clinics in the treatment of his venereal patients. Every practitioner, panel or otherwise, should make up his mind to utilise these clinics in the way that seems to him best for the patient's welfare. Which of the actual methods he may decide upon in any particular case will, no doubt, vary with his clinical experience of such cases, but so long as he is determined to utilise these facilities with no other guide than the patient's well-being the success of the scheme is assured.

It might seem unnecessary to dwell on the obvious duty of the doctor in this way were it not for previous examples of the pernicious influence of medical "politics" in obscuring the ethical judgment of some members of the profession. Even now, almost before a single local authority has evolved a settled scheme, one hears ominous rumours of difficulties with the local profession as to finance, the arrangements for the free supply of salvarsan, and so on. By all means let the profession see to it that there be no exploitation of their services, but let us avoid the humiliating spectacle of appearing to place finance rather than the national health in the

forefront of our association with this campaign. It is quite possible that the provision of free treatment to all comers may entail a certain amount of financial sacrifice to practitioners. Should this prove so, it must be borne, though it is probable that a large proportion of those able to afford private treatment will prefer to have it.

Courses of Instruction.

There can be no question that in the past the public has suffered greatly through lack of proper facilities for treatment, both private and institutional. Largely through the mistaken attitude of the teaching hospitals, few doctors have had anything like adequate clinical training in venereal diseases, so that even the recently qualified are comparatively unversed in modern methods, while most of the older men have had no opportunity for post-graduate instruction. This applies not only to syphilis, but perhaps even more to gonorrhoea, which is still only too often treated by "expectant" methods instead of by the far more effective irrigation, &c., now in vogue in the Army and elsewhere. All this should soon be a thing of the past, and every practitioner should now have ample opportunity of bringing his knowledge up to date by attending the local clinic and by bringing his patients there for consultation. Those who can spare the time should seize the opportunity of attending as clinical assistants, and in that manner familiarising themselves with the details of diagnosis and treatment.

Mention may here be made of the admirable work now being carried out for the education of civil practitioners in this subject at the Rochester Row Military Hospital, London. With the sanction and encouragement of the Director-General of the Army Medical Service, Lieutenant-Colonel L. W. Harrison, R.A.M.C. is holding courses of instruction for panel and other practitioners, in the taking of specimens for examination, and other useful branches of the work. These demonstrations are held in the afternoons, the most suitable time for busy practitioners, and opportunity is given them of attending at other times for actual clinical work. No charge is made for these most useful courses, and I have Colonel Harrison's authority for saying that he will welcome the presence of any medical man, London or provincial, who cares to avail himself of the opportunity.

It is sincerely to be hoped that similar courses may be arranged by experts in large provincial towns at the earliest possible opportunity, so that the advent of the clinic may find men ready to take immediate advantage of its presence by sending to its laboratory suitably collected specimens for examination.

INSTRUCTION OF PATIENTS.

An important subject upon which I have not yet touched is the duty of the doctor to instruct his patients as to the infectivity of these diseases. The Commission recommends that "the obligation should be impressed upon all doctors who treat syphilis and gonorrhoea in institutions or privately to hand cards of instruction and warning to their patients. These cards should be in some such form as that given in the report, and should be provided at the public expense." The forms alluded to, which are to be found in pars. 121 and 123 of the Final Report, are as follows:—

Card for Syphilis.

1. Syphilis is a contagious disease; it can be cured if promptly treated by a doctor.
2. Treatment by quacks, herbalists, or persons advertising so-called nature cures is likely to lead to disastrous results.
3. The infection may last several years. It can be conveyed to others by sexual intercourse, by kissing, or by using the same eating or drinking utensils or tobacco pipes, &c.
4. Treatment should not be stopped until the doctor says this may be safely done.
5. Should signs or symptoms of the disease appear, such as rashes on the skin, sore throat, or symptoms of nervous disease, a doctor should at once be consulted.
6. A doctor should be consulted occasionally, even though there are no symptoms of a return of the disease.
7. Treatment need not, as a rule, interfere with work or necessitate stay in hospital.
8. No one who has, or has had, syphilis should marry without permission of the doctor; otherwise there is great danger of giving the disease to wife and children.
9. Teeth should be cleaned night and morning. The patient should dress warmly, live simply, and avoid wine, beer, spirits, and other intoxicants.

Card for Gonorrhoea.

1. Gonorrhoea is a contagious disease contracted through sexual intercourse. Gonorrhoea may be attended by grave consequences, especially if treatment is neglected and the necessary precautions are not taken.
2. Treatment by quacks, herbalists, or advertisers is likely to lead to disastrous results.

3. Sexual intercourse must on no account be indulged in while there is any discharge, even though this may be only slight. If this rule is neglected the condition is made worse. Moreover, there is always danger of communicating the disease.

4. Gleet, a late form of gonorrhoea, associated with a slight chronic discharge, is very likely to communicate the disease to the wife, causing much suffering and sometimes leading to chronic invalidism and barrenness.

5. Care must be taken that the discharge is not conveyed to the eyes. Neglect on this point may lead to injury to eyesight or to blindness.

6. Large quantities of simple fluids should be drunk, but no wine, beer, spirits, or other intoxicants should be taken while the discharge continues and for some considerable time after it has stopped.

The Local Government Board will undoubtedly undertake the provision of these cards, and no difficulty will exist as regards their distribution to "clinic" patients. As regards private patients, there is at present no legislative machinery for enforcing this recommendation, but there is no reason to doubt the willingness of the whole profession to accede to so reasonable a scheme. All that should be necessary would be for the Local Government Board to issue a supply of these cards to each practitioner.

THE QUESTION OF MARRIAGE.

A closely related question for the doctor is that of the marriage of patients of this class. Should his advice be asked on the matter, as often occurs, what should be his attitude? Everyone is, of course, agreed that marriage must be forbidden so long as the patient is at all infectious, but the real difficulty is to know at what stage the danger has ceased, or what criteria should be relied upon for settling the question. In the case of syphilis the importance of the problem is widely recognised, though differences of opinion exist as to when the infectious stage has passed, and the Commission's report is silent on this point. Dr. F. W. Mott informs me that he agrees with Fournier's dictum that permission may be given for marriage if four years have elapsed since the primary infection and the patient has been free from all symptoms for at least a year. It is impossible at the present time to dogmatise on the relation of the Wassermann blood reaction to infectivity. Just as a positive "von Pirquet" may be present in a case of quiescent tuberculosis, so it seems that a positive "Wassermann" may persist after all signs of active syphilis have disappeared. In exceptional cases, where vigorous early treatment has been pursued and secondary symptoms have been entirely absent, it is probable that a negative reaction might justify earlier marriage, but a longer experience with the newer methods is necessary for a proper elucidation of these details.

As regards gonorrhoea, the evidence of Mr. Frank Kidd, Colonel T. W. Gibbard, A.M.S., and others emphasised the difficulty of establishing the freedom from infection of such patients, owing to the tendency of the gonococcus to lie dormant in the urethral crypts, prostatic glands, &c., until again roused into activity by some indiscretion of the patient. On the question of marriage, Mr. Kidd (Appendix XXIV.) states that he decides this point in doubtful cases by a bacteriological examination of three samples of the contents of the seminal glands, obtained by prostatic massage. If no gonococci are found in these samples, he is satisfied that the patient is no longer infectious. I must confess to feeling some doubt as to this method ever becoming universally employed, but its adoption by such an expert emphasises the necessity for caution in pronouncing an opinion on this matter.

What should be the attitude of the doctor in a case where the patient refuses to follow the advice, and expresses a determination to marry in spite of still being infectious? Should he inform the responsible relative of the other party to the marriage? This raises the wider question of "professional secrecy" in relation to venereal disease—e.g., whether a husband's illness of this nature, if infectious, should be divulged to the wife, and vice versa. Every dictate of common-sense and humanity demands that the doctor should do all in his power to prevent the infection of the innocent, and no question of professional secrecy should be permitted to stand in the way if the patient's attitude renders this secrecy dangerous to others. It is true that at the present time a practitioner might render himself liable to an action for libel or slander by stating to a third person that anyone is suffering from a venereal disease. This objection is more theoretical than practical, as "proof of the truth of the defamatory words affords a complete defence" in a civil action against a medical practitioner, and it is therefore extremely unlikely that such an action

would be entered by an "aggrieved" patient. There is not the slightest doubt, however, that a communication of this nature ought to be legally "privileged," and it is satisfactory to find that the Royal Commission makes the following recommendation on this point:—

The law should be amended to provide that a communication made *bona fide* by a medical practitioner to a parent, guardian, or other person directly interested in the welfare of a woman, or man, and with the object of preventing or delaying marriage with a person who is in an infectious condition from a venereal disease, shall be a privileged communication.

As it stands, this is not wide enough, as it appears to limit privilege to communications made with a view to preventing marriage, whereas it should cover any communication intended to prevent the spread of infection. This would be attained by altering the phrase—"and with the object" to "or with the object." In all probability, legislation on these lines will soon be an accomplished fact, and then the way will be freed for every doctor to insist that no infectious patient of his shall spread these diseases to unsuspecting victims.

COMPULSORY NOTIFICATION.

In conclusion, a word on the subject of "compulsory notification," around which recently has raged a good deal of unfortunate controversy. Viewed in the abstract, there is no doubt in anyone's mind that such notification is an admirable adjunct to the fight against infectious diseases. In the particular case in point, however, there are two very weighty objections to its application *at the present time*—namely, lack of sufficient facilities for treatment and the prevalence of quackery.

As regards the first point, it is obvious that notification must be useless unless the cases so notified can be at once effectively treated. At the present moment this is out of the question; the machinery for the purpose simply does not exist. Every day, in my capacity of honorary secretary of the National Council for Combating Venereal Diseases, I receive letters from sufferers in various parts of the country asking where they can receive proper treatment. I refer them to the local doctor or hospital, as the case may be, but only too often with the feeling that their chance of satisfactory attention is slight.

As regards the second point, there is every reason to fear that, so long as quacks are allowed to flourish and advertise, compulsory notification would simply drive more victims than ever into their toils. Venereal diseases stand in a category apart by reason of the unfortunate stigma attaching to them, and also from the fact that the patient is in most cases not obviously ill and therefore not compelled to give up work. As a result compulsory notification would lead in many cases to neglect of all treatment and in many others to resort being had to quacks. When treatment-centres are in full working order, when quackery has been abolished by a beneficent legislature, and when the public has been adequately instructed in the terrible results of neglect, then may compulsory notification be fitly introduced as a powerful weapon in the fight against this scourge.

"OUR DAY" IN DEVON.—At the last meeting of the finance committee of the Devon branch of the Red Cross Society it was reported that the "Our Day" collection, which was recently held in Devonshire, would realise about £7000. This sum will be handed to the British Red Cross Society and the Order of St. John of Jerusalem.

CHADWICK PUBLIC LECTURE.—In his lecture on "Baby-saving for the Nation," delivered this week at the Central Library, Hampstead, Dr. J. T. C. Nash, medical officer of health for the county of Norfolk, dealt in detail on the causes of the declining birth-rate. He stated that the size of the family tends to vary inversely as the social status of the parents, and that whereas in 1881 upper- and middle-class reproduction practically equalled that of the unskilled and intermediate working class, it now amounted to only one-half. He instanced Hampstead's precipitous descent from a high to a low birth-rate, but noted the marked fall also amongst the largely agricultural population of Norfolk. Infant mortality was a product of many agents, personal and social, of which the most important single factor was the disease of breast-feeding. Only a national concentration on the whole problem of infant-rearing would suffice to avert disaster.

ILLUSTRATIONS OF THE DIAGNOSTIC VALUE OF AGGLUTININ DETERMINA- TIONS IN INOCULATED INDIVIDUALS.

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(A Report to the Medical Research Committee. From the
Department of Pathology, Oxford.)

IN the blood of individuals inoculated against typhoid fever there are present certain quantities of agglutinins for *B. typhosus*. The amount of these agglutinins is so remarkably diverse in different individuals, even when they have received identical doses of the one and same vaccine and are examined after the same lapse of time,¹ that it is quite impossible to arrive at any kind of figure which could be taken to represent their probable value in any given individual at any given interval after his inoculation. Accordingly it is impossible to decide on making a determination of agglutinin titre whether the agglutination observed is wholly the result of past inoculation, or whether it contains evidence of superadded active infection. Recognition of these facts a year and more ago led a number of experienced pathologists to declare that the Widal reaction failed to afford information of diagnostic value as regards typhoid infection in typhoid-inoculated individuals. Where there was danger that this fact might not be recognised so speedily, it was abundantly brought home by clinical experience of "the failure of the Widal test due to inoculation."²

Under these circumstances Dreyer, Ainley Walker, and Gibson³ drew attention to the fact that in these inoculated individuals a diagnosis could still readily be made by means of the agglutinin reaction if the agglutination test were repeated several times at short intervals in order to ascertain whether the titre of agglutination showed marked changes affording evidence of an immunity reaction such as is known to accompany active infection. But for this purpose it was necessary to employ an accurately quantitative method of determination, and one whose results were always comparable *inter se*. It was therefore proposed to make use of the method published by Dreyer in 1906 (rendered more accessible to British pathologists in 1909⁴), which had for years proved eminently satisfactory, and was then (as it still remains to-day) the only published method which adequately fulfils all the requirements. And it was shown that where this method was used in the examination of individuals inoculated against typhoid fever the agglutinin reaction still afforded the simplest and the most reliable method of diagnosis in suspected cases of typhoid infection.

Now it is obvious that what could thus be done in regard to the diagnosis of typhoid fever in individuals inoculated against *B. typhosus* can also be done for paratyphoid A infection in persons inoculated against *B. paratyphosus* A and for paratyphoid B infection in persons inoculated against *B. paratyphosus* B, probably also for enteric infections (typhoid and paratyphoid), generally in persons inoculated against all three micro-organisms. Yet since the introduction of inoculation with triple vaccine (*B. typhosus*, *B. paratyphosus* A, and *B. paratyphosus* B) the old notion that the agglutinin reaction can no longer be employed as a ready diagnostic instrument shows a tendency to reassert itself. Unfortunately it even makes its reappearance under the protection of some pathologists who have had ample opportunity of seeing evidence to the contrary. This would be a matter of the less urgent importance were there alternative methods of diagnosis at disposal which offered a reasonably equal probability of success. The facts, however, are quite the reverse. Failing the agglutinin reaction, recourse must necessarily be had to methods of blood cultures and to cultivation from the stools and urine. And all these methods require not only extensive preparation and expenditure of material, but very considerable skill and experience. They are laborious, so that the worker can at best not handle more than a fraction of the number of cases that he could easily examine by agglutination tests. They are complicated and cannot invariably be carried out under active service conditions. Worse than all, even though repeated examinations

are carried out, they very often fail entirely. The infecting micro-organism frequently refuses to be isolated, and evidence justifies the statement that *quite half* the cases will remain undetected where these methods are exclusively relied upon.

Now it is obvious that under present conditions no one would willingly or consciously assume the grave responsibility entailed in failure to detect cases of typhoid or paratyphoid fever which are capable of being readily detected. Yet this is what must necessarily occur, to the gross prejudice of general hygiene and efficiency, if only those cases of "enteric fever" are detected which yield a positive result by culture methods. On the other hand, the agglutination test, when suitably carried out and appropriately repeated, can be made to yield a uniformly accurate diagnosis in cases examined during active infection. It has been shown by Dreyer⁵ and others to give correct results over long series of cases in which the diagnosis was rendered absolute by the successful cultivation of the infecting micro-organism from blood, stools, or urine. It may, therefore, safely be presumed also to give reliable results in cases where the infective agent itself has not been isolated and identified.

It has been suggested that needful assistance would be given to others in the interpretation of results obtained in such agglutination tests by the publication of a series of illustrative charts from actual cases with brief explanatory notes.

Notes and Illustrations.

In interpreting the results of agglutination tests attention is directed to the known form of the immunity curve of agglutinin production resulting from a natural (or artificial) infection. The general outline of such curves is now familiar. They were first traced by accurately quantitative methods in typhoid fever by Madsen and Jørgensen,⁶ and subsequently with still greater certainty by Dreyer and Schroeder,⁷ employing Dreyer's standardised agglutinable cultures. Similar curves were also given by Dreyer and Ainley Walker,⁸ both for specific and for non-specific stimulation of agglutinin formation under experimental conditions.

A good example of an agglutinin curve is shown in Chart I, which is here reproduced from a previous article.⁹ The broken line represents the course of agglutinin formation in a case of typhoid fever—the curve of immunity reaction for agglutinins—and set over against it in thick lines are observations on three cases occurring in typhoid inoculated individuals designated by the signs α , β , and γ respectively. The first two of these cases were cases of active paratyphoid B fever, the third case was "not enteric."

Before proceeding to the actual description of illustrative curves* it will be of advantage to collect together certain data on which diagnosis proceeds. Most of these data have already appeared in the Directions for Use of Standardised Agglutinable Cultures issued on behalf of the Medical Research Committee or have been published elsewhere by Dreyer and his co-workers. Their original statements have received additions and extensions from time to time as knowledge and experience have accumulated. Doubtless these statements may be subject to some further elaboration or to some qualification in the future, but the main outlines have been firmly established from an early date and have proved themselves to be reliable in the opinion of other workers.⁹

1. In *non-inoculated persons* who have never had enteric fever† agglutination in a dilution of 1 in 25 (1 in 10 paratyphoid A¹⁰) justifies a strong suspicion of active infection. But the test must be repeated in the course of a few days to ascertain whether there is any change in the titre of agglutination. Marked agglutination in dilution of 1 in 50 or more is (nearly always) diagnostic of active infection. A non-inoculated "carrier," in whom infection is inactive, will normally show no important change in the titre of his serum on repeated examination at short intervals.

2. *Inoculated persons*, if quite recently inoculated, will usually show a high titre of specific agglutination. The curve in Chart 1, from a case of typhoid fever, serves equally well to show the general form of the curve of agglutinin

* Detailed agglutinin curves for enteric fevers in inoculated individuals were first worked out by Dreyer a year or more ago from daily observations in a number of patients. But the data were unfortunately in great part destroyed by fire.

† Here and elsewhere the term *enteric* fever includes both typhoid and paratyphoid infection.

formation following inoculation. A rapid rise in titre (for each bacillus in the case of triple vaccine) sets in within a few days of inoculation. A maximum is reached, followed by a fall at first rapid, but subsequently becoming very slow, so that a relatively high titre may be maintained for a long period (even for years). During this period examinations made at intervals of a few days give practically identical readings.

3. When an inoculated individual suffers from an attack of enteric fever his titre of agglutination for the bacillus concerned (typhosus, paratyphosus A, or paratyphosus B) will exhibit the usual rise and subsequent regular fall seen in non-inoculated subjects (Chart 1), but starting from and returning towards the higher base line of inoculated persons. Meanwhile one of three things may occur as regards the agglutinin titres of his serum for other members of the group against which he has been protectively inoculated:—

(a) No appreciable rise may occur in the titres.

(b) A relatively slight rise may occur, followed by a fall towards their former level.

(c) A marked rise may occur approximately synchronous with or somewhat antecedent to the rise in agglutinin titre for the infecting bacillus, and subsequently followed by the usual fall.

In this connexion it is useful to note that paratyphoid B infection is particularly often found to be the occasion of a marked rise in the typhoid agglutinins. Further, such a rise in the typhoid agglutinins is often—especially in persons inoculated only against B typhosus—the first evidence presented of what subsequently proves to be paratyphoid B (or paratyphoid A) infection.

Rises of this kind in the agglutinin titre

of the serum for organisms other than the infecting agent have been attributed to the production of so-called co-agglutinins. But without entering on a discussion of the true meaning of "co-agglutination," it may be stated that when standardised agglutinable cultures are employed experience proves that notable co-agglutination is not met with in the enteric group. And these subsidiary rises in agglutinin titre are almost certainly to be explained as due to a re-stimulation by infection with a closely allied organism of the mechanisms already trained by inoculation to produce particular series of agglutinins.

Similar rises in agglutinin titre can be produced in immunised animals by the introduction of wholly heterologous bacteria. But to what precise degree the same fact may apply to the effect of pyrexial attacks occurring in inoculated human subjects from causes other than enteric infections we do not at present know with certainty. Accordingly a diagnosis of typhoid or paratyphoid fever should not be based on a rise in titre of only 100 or 200 per cent., if it is clear that the maximum of that rise falls markedly outside the period of expectation for enteric fever¹⁰ (see 4, below). Yet it must be stated that the rises in enteric agglutinin titre so far met with in association with other febrile conditions very rarely amount to as much as 100 per cent., and are much more frequently either altogether absent, or so small as to be practically negligible.

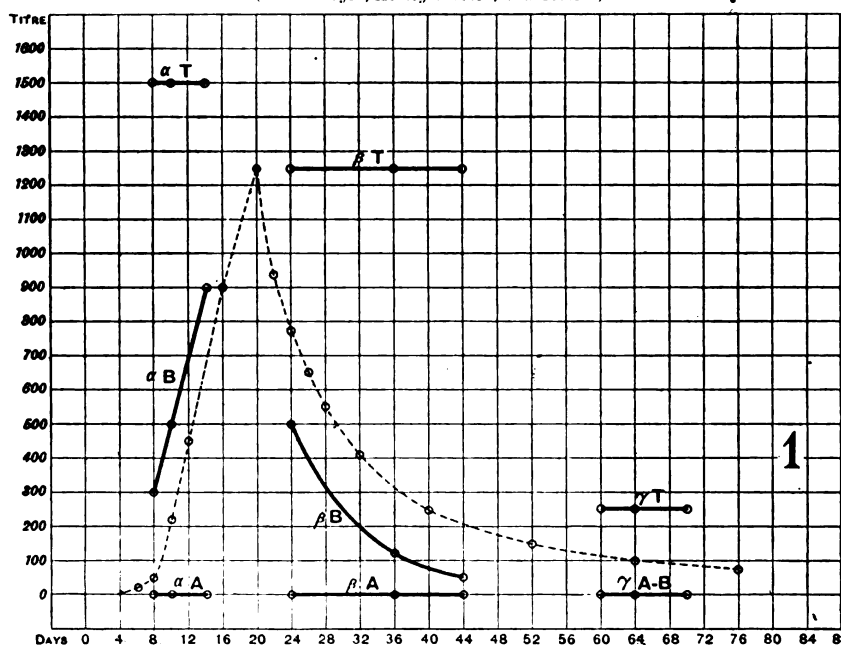
4. The maximum of the curve of specific agglutinin formation accompanying enteric infection in man occurs between the sixteenth and the twenty-fourth day of the disease, and most frequently from the eighteenth to the twentieth day. And, so far as experience at present goes, a change of titre of even only 100 or 200 per cent., proceeding regularly in the usual curve, and passing its maximum within the period named, justifies a diagnosis of enteric fever.¹⁰ It will, of course, most commonly be found that the maximum has occurred in the interval between two successive observations.

5. In the case of mixed infections with enteric group bacilli (typhoid and paratyphoid), whether in inoculated or non-inoculated persons, the agglutinin curves for the different infecting organisms pursue their course independently of each other. They are therefore usually not synchronous, though they may be so.

Readings.—In reading the agglutination tubes put up with different dilutions of serum what is looked for first is a tube exhibiting standard agglutination—that is, marked agglutination (naked-eye) without sedimentation (Dreyer); and the reading proceeds as described in the Directions for the Use of Standardised Agglutinable Cultures issued on behalf of the

Medical Research Committee. Such readings give results entirely adequate for diagnostic purposes, if from three to five successive observations be carried out at intervals of from three to five days. Should a more precise determination of the limits of agglutination be required, as in experimental work or for the purpose of obtaining smooth and accurate curves, it can be obtained by reducing the intervals between the successive dilutions of the serum as described in the "Directions," or by attaching

CHART SHOWING COURSE OF AGGLUTINATION.
(From Dreyer, Ainley Walker, and Gibson.)



appropriately calculated values to various degrees of agglutination recognisable as increasingly greater and increasingly less respectively than standard agglutination. Thus Dreyer has shown that naked-eye differences in agglutination, ranging on each side of standard agglutination from total agglutination on the one hand to nil on the other, can be recognised distinctly when the serum dilutions increase or diminish in successive tubes by about 13 per cent., starting from standard agglutination as the central point and ranging upwards and downwards.

In the curves now to be described all the readings are expressed in standard agglutinin units (Dreyer) as defined in the "Directions," where the simple process of reducing an agglutination result observed in serum dilutions to standard agglutinin units per c.c. of serum is fully explained. The matter need not be described in detail here since the "Directions" are readily accessible in this country and have also been published in an article by W. C. Davison in the *Journal of the American Medical Association* (vol. lxi, (1916), pp. 1297-1300). The tubes were read in the usual manner after two hours in the water-bath at 50° to 55° C., followed by 15 minutes at the room temperature. Following Dreyer's full method, they were always read again for control after 24 hours' standing at room temperature, by which time any possible "zones of inhibition" have ceased

to complicate the readings. The readings move on slightly in the 24 hours.

On each chart is given a table of the actual readings made. These readings are plotted out and curved dotted lines are drawn through the points thus obtained so as to indicate approximately the probable form of the agglutinin curve. Points between which a maximum is believed to lie are not joined, but the curve is there left open. Upon each chart is also entered the character of the protective inoculation which the patient had received (typhoid vaccine T., triple vaccine T.A.B.) and the diagnosis given by the agglutination tests is recorded. The letters T.A.B. stand throughout for typhoid, paratyphoid A, and paratyphoid B respectively.

Cases of Typhoid Fever.

Chart 2.—A case of typhoid fever in a T.-inoculated individual. The T. agglutinin titre rises to more than double in the first four days. At the third observation, when the titre is probably already falling rapidly, it is 200 per cent. above the first reading. Maximum between twenty-first and twenty-fourth day of disease. Reaction moderate, probably a mild attack. No "co-agglutination" for A or B accompanies the reaction. Clinically, irregular pyrexia, rising at intervals to between 102° and 103° F.†

Chart 3.—Typhoid fever in a T.A.B.-inoculated individual. The measured rise in T. agglutinin titre is five-fold (400 per cent.) within nine days; maximum between eighteenth and twenty-first day. The fall is to less than one-half in three days and to one-third in six days. From the readings in this case (as in Chart 2) we learn that the curve of rise is steeper than the curve of subsequent fall. The sympathetic rise and fall in A and B "inoculation" agglutinins are marked definite and approximately synchronous. Clinically, temperature high at first (103° F.); never above 99° after fifteenth day.

Chart 4.—Typhoid fever in a T.-inoculated individual. This case again illustrates the great relative steepness of the rise in its later part as the maximum (probably sixteenth or seventeenth day) is approached. Its chief interest is in the existence of A and B agglutination curves running side by side, their maximum being pretty clearly a little antecedent to the T. maximum. The patient came from the Mediterranean area and gave a long history of diarrhoea, fever, &c., before his removal to England as a convalescent. The present attack began three months later. His agglutination readings clearly show that he had suffered from mixed or consecutive A and B infection at some period previous to the present observations. Clinically, onset with shivering and headache. Three smart rises of temperature to 105°, 103·5°, and 102·5° F. respectively on the first, third, and fifth day of illness simulating tertian ague. No malarial parasites in the blood. From the fifth day onwards temperature subnormal and rising to normal.

Cases of Paratyphoid A Fever.

Chart 5.—Paratyphoid A fever in a T.-inoculated individual. Reaction mild, but A agglutination rises in five days from less than 2 units to over 27 units (about 14-fold), a rise, be it noted, of at least some 1300 per cent. The fall is fairly rapid, but nothing like so steep. No "co-agglutination" for B. Sympathetic rise of T. inoculation-agglutinins marked and apparently pretty nearly synchronous. Clinically, very mild illness, temperature not exceeding 99° F.

Chart 6.—Paratyphoid A fever in a T.A.B.-inoculated individual. Clinically jaundice, cholecystitis, severe and continued remittent and irregular pyrexia. The diagnosis paratyphoid A is obvious. The accompanying T. and B agglutination are shown on a large scale. They present points of interest and deserve examination.

Cases of Paratyphoid B Fever.

Chart 7.—Paratyphoid B fever in a T.-inoculated individual. This case is one already quoted (from Dreyer and Torrens) in a previous article.⁹ The B agglutinins increase nineteenfold in eight days. Maximum between the eighteenth and twenty-second day. The rise in T. inoculation-agglutinins is marked and approximately synchronous. No co-agglutination of A.

Chart 8.—Paratyphoid B fever in a T.-inoculated individual. A mild reaction, but the rise in B agglutinins is at least nineteenfold. Maximum nineteenth or twentieth day of the disease. Maximum of sympathetic T. inoculation-agglutinin rise probably antecedent. No co-agglutination of A. Clinically, diarrhoea and indisposition. The temperature never reached 100° F., and only three times exceeded 99° (evenings of seventeenth, eighteenth, and nineteenth days).

Late Cases.

Many cases do not come under observation here until late in the disease. These are often somewhat difficult to

† The pyrexia of enteric fever in inoculated persons is very often quite atypical, particularly in the mild attacks.

interpret, particularly when the day of onset is unknown, as is frequently the case, for example, in wounded subjects suffering from sepsis and pyrexia.

Chart 9.—Paratyphoid A fever in a T.A.B.-inoculated wounded individual. Observations begin late in the attack, but the T.A.B. agglutinin curves all indicate the existence of active reaction. The differential diagnosis rests on the fact that in the case of A the maximum has occurred later, and the amplitude of the reaction appears to have been greater than in the case of T. and B. agglutinins.

Chart 10.—Paratyphoid B fever in a T.A.B.-inoculated individual wounded 43 days before the first day of observation. The B agglutinins fall steeply to one-third in three days and to about one-fifth after six days. T. and A agglutinins fall relatively slowly. Clearly a case of paratyphoid B infection.

Mixed and Consecutive Enteric Infections.

Chart 11.—Mixed infection; paratyphoid A and B. Clinical condition, "trench fever." Moderate pyrexia, temperature falling to subnormal and normal on and after twentieth day of illness. Agglutinin titre for A rises eightfold in three days, that for B nearly sevenfold, both thereafter falling to less than one twenty-fourth of the higher reading in the next five days. Agglutinin titre for T. shows only a slight sympathetic rise; maximum antecedent to that of A and B agglutinins.

Chart 12.—Consecutive infection; paratyphoid B succeeding typhoid fever. The temperature fell (from 102° F.) to subnormal on the first day of observation. It rose again on the sixth day, becoming subnormal again on the tenth day. The agglutinin chart also shows that we are dealing with two independent reactions: first, the later part of a B. typhosus infection; and, secondly, a B infection in which the B agglutinins rise 300 per cent. at the second reading with an accompanying sympathetic rise in A agglutinins. Judging by the speed with which the T. curve becomes flat the fall in T. agglutinins is distinctly checked by the B reaction.

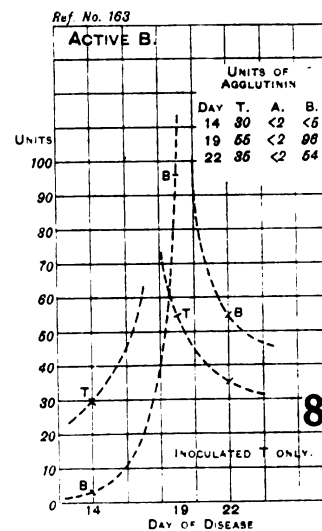
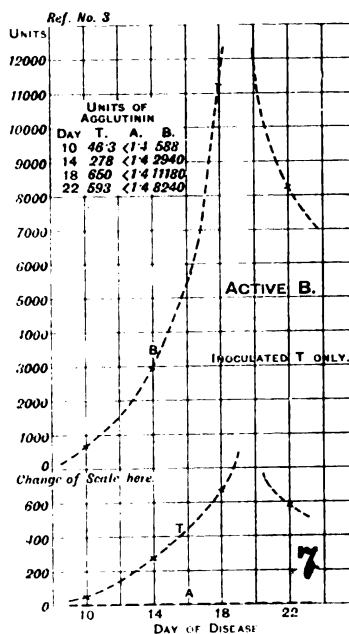
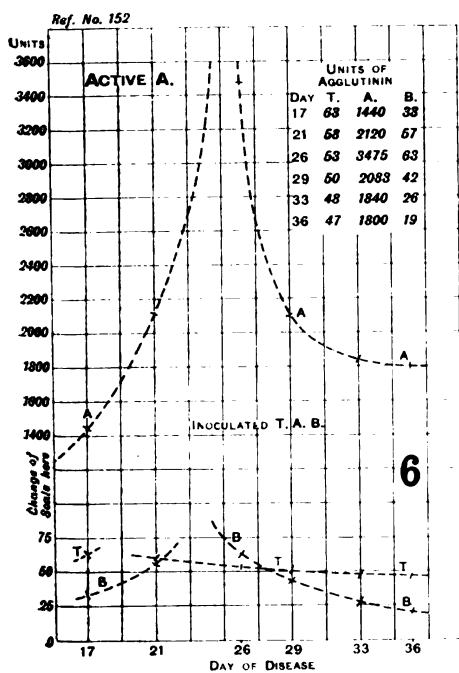
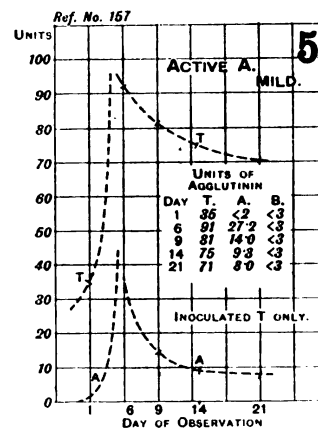
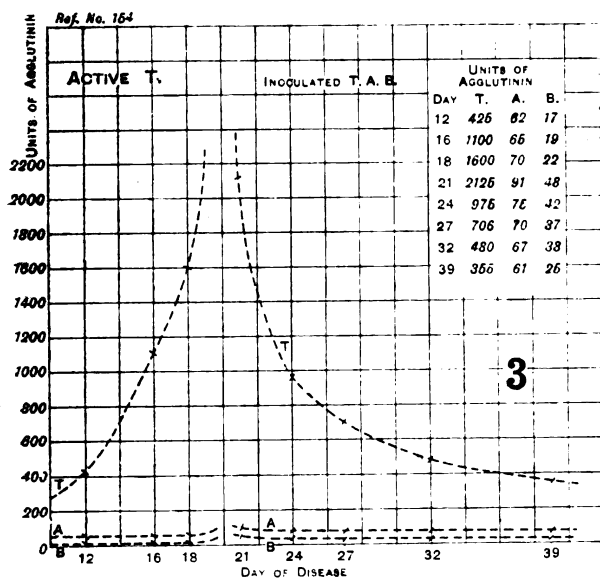
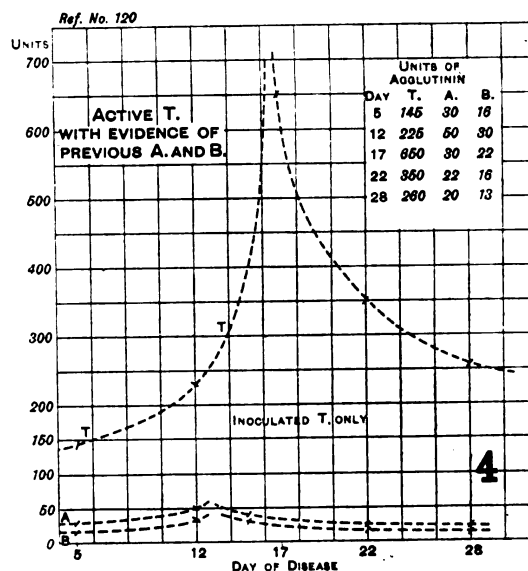
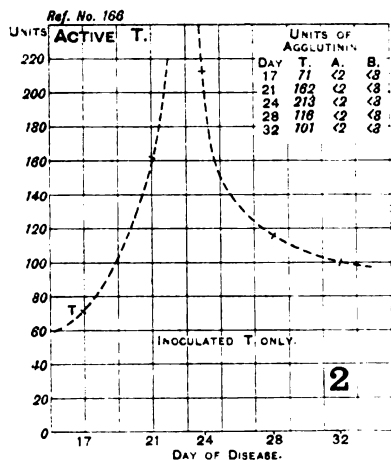
Chart 13.—Looks a little complicated. The day of disease is reckoned from the day on which the patient was wounded. He had long-continued very irregular, remittent, and intermittent pyrexia. The first stage of the illness is clearly paratyphoid A fever. The A agglutinins first rise, and then fall from the second observation to one-fifth in the course of eight days. The T. and B agglutinins move only moderately in sympathy. But on the twenty-sixth day of disease it is noted that instead of continuing their normal fall T. and B agglutinins begin to rise again, followed then or later on by the A agglutinins. Something new is evidently happening. Owing to the extreme gravity of the illness and accompanying delirium no further blood specimen was received until the fortieth day. B agglutinins were then found to have undergone a marked rise of about 135 per cent., and thereafter fell sharply to less than one-seventh of the highest observed value. The rise in A agglutinins was apparently less than on the former occasion, and its second maximum, like that of the T. agglutinins, preceded the maximum of B. agglutinins. The later part of the curves therefore indicates a paratyphoid B infection following the original paratyphoid A.

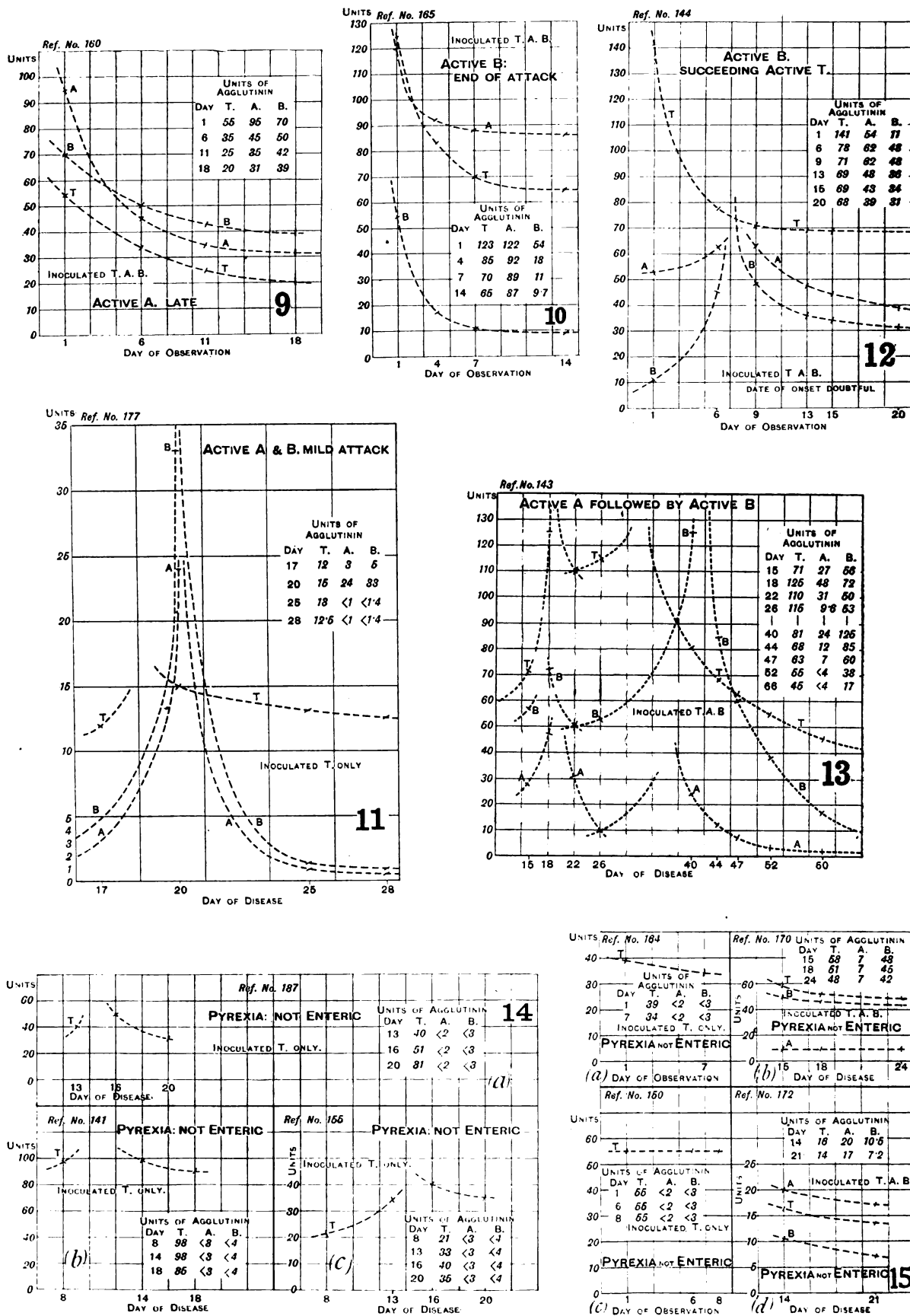
Pyrexia "not Enteric."

Chart 14.—Three cases of pyrexia, with a rise and fall in T. agglutinins, diagnosed as *not enteric*. The recorded change in titre is less than 100 per cent. in each case, and the maximum falls in each case before (though not always very long before) the sixteenth day as judged from the form of the curves. Two of these cases, (a) and (c), are typical of those which cause the greatest difficulty in serum diagnosis. They are recorded as being the most marked of their kind that I personally have yet met with. On their charts as they stand opinion might perhaps not unreasonably differ as to whether the diagnosis of enteric fever was properly excluded or not. In such cases, which fortunately do not seem to be of very frequent occurrence, all available collateral evidence, both clinical and pathological, may require to be taken into consideration. And it may be suggested that from the hygienic standpoint a case that remains persistently in doubt had better be regarded as potentially enteric.

Chart 15.—Four examples of the more usual findings in febrile conditions other than enteric fevers. Here the diagnosis "not enteric" is obvious.

The evidence brought forward in the charts which have now been described shows plainly that when standardised agglutinable cultures are employed in successive quantitative determinations of the agglutinin titre of the serum little difficulty is to be apprehended in the diagnosis and differentiation of the enteric fevers. In those cases which come under examination by Dreyer's method within two to three weeks of the onset of the disease no difficulty at all is likely to be met. But attention should be drawn to the fact that the majority of these cases here recorded (8 out of the 13)





were what may fairly be spoken of as mild and atypical cases of enteric fever. For reasons already indicated elsewhere (Dreyer and Ainley Walker¹⁰) such cases are likely to occur with frequency under present conditions. It is, therefore, a matter of importance that this fact should be widely recognised, and that all doubtful febrile cases of whatever mildness should at an early period be submitted to agglutination tests before the possibility of enteric infection is excluded. If they are cases of enteric fever they will then be readily detected.

In a recent article, however, C. J. Martin and Upjohn conclude their communication with the statement that since the introduction of triple vaccine (typhoid, paratyphoid A, and paratyphoid B) in the inoculation of Australian units "the interpretation of observations upon the agglutination of enteric organisms will be too difficult to possess any practical value, and the isolation of the infecting organisms must be resorted to for diagnosis." The difficulty in the opinion of the present writer lies rather in persuading some observers to employ methods which have any "practical value" in inoculated persons. And the suggestion that reliance should be placed on culture methods finds its answer not only in the fact that with the most perfect technique and organisation methods of cultivation from blood, stools, and urine fail in quite half the cases which come under observation; but also in the statement made by Martin and Upjohn themselves that it would not have been possible for them "to have made more than one-fifth the number of observations by blood culture, and at least half of these would have miscarried as so many of the patients were past the first week of the disease on admission."

References.—1. Dreyer and Inman: THE LANCET, July 31st, 1915. 2. Dawson, Sir Bertrand: THE LANCET, March 20th, 1915, p. 602. 3. Dreyer, Ainley Walker, and Gibson: THE LANCET, Feb. 13th, 1915, p. 324. 4. Dreyer: Journal of Pathology and Bacteriology, 1909, vol. xlii., p. 332. 5. Dreyer: Proc. Roy. Soc. Med., 1915, vol. ix. (Medical Section), p. 9. 6. Madsen and Jørgensen: Festskrift ved Indv. af Statens Seruminst., Copenhagen, 1902. 7. Schroeder, K. Thesis, Copenhagen, 1909. 8. Dreyer and Ainley Walker: Journal of Pathology and Bacteriology, 1909, vol. xlii., p. 343; vol. xiv., p. 39. 9. Glynn and Cronin Lowe: THE LANCET, Aug. 5th, 1916. 10. Dreyer and Ainley Walker: THE LANCET, Sept. 2nd, 1916.

A PRELIMINARY NOTE ON PIECES OF CLOTHING EMBEDDED IN WAR WOUNDS.

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With a Note by Surgeon-General Sir W. WATSON CHEYNE,
Bart., C.B., F.R.S., F.R.C.S. Eng.

I HAVE read with much interest Miss M. Davies's article in THE LANCET of Sept. 30th. For a considerable time I had been thinking over the question of the acute sepsis which is a sequel to the implantation of fragments of clothing in war wounds, and my interest was stimulated after the Jutland naval battle. Two lines of thought suggested themselves, viz., (1) that it would be a good thing if it could be known definitely if there was any foreign body, ordinarily non-transparent to X rays, in the wound; and (2) if the same foreign body could be treated with some antiseptic prior to its entry to the wound, and, if possible, that the same medium should be made to fulfil the two purposes.

Jutland Naval Battle Patients with Shell Wounds.

Twenty-six cases were received in my wards, which are classified under three groups: (a) patients with lacerated wounds which were aseptic, 15; (b) patients with lacerated wounds which were septic, 6; and (c) patients with both aseptic and septic wounds, 5. I regarded a wound as clinically aseptic when its lacerated margins were in a condition of dry gangrene, when it only required dressing once every two or three days, and when the patient's temperature and pulse-rate remained normal.

Of the above septic wounds either pieces of the wearer's clothing or boots were recovered from the wounds of 5 patients (i.e., 4 of Group b and 1 of Group c). A marked feature of each septic wound was the offensive smell. Twenty of the patients had wounds which were clinically

aseptic, while 11 of the cases had wounds which were septic. As the wounded were received nearly two days after the action no systematic search under general anaesthesia for fragments of clothing was made. Those obtained appeared in the ordinary process of dressing the wounds; it is quite possible that the other septic wounds also harboured similar foreign bodies in their depths.

The above figures are a good testimonial to the work done by the surgical staffs of the warships before transference to the hospital ship. They further show what a factor ordinary clothing plays in a wound becoming septic. This clothing must be saturated with pyogenic organisms derived from the exterior, also exuded from the wearer's skin.

In the trenches simple sterilisation by heat is insufficient, because the sterile clothing would be so quickly contaminated by the soldier's surroundings. If, therefore, any good is to accrue, the garments must be impregnated with some antiseptic; this would inhibit bacterial growth should a fragment be carried deep into the tissues by a piece of shell. Further, this antiseptic might prevent the rapid breeding of vermin, which is so bitterly complained of at the "Front."

How can Clothing be made Opaque to X Rays?

Possibly this can be done by the recently described method of delineating the various internal soft tissues by X rays. It can be done by the manufacturer treating the clothing and underclothing with a preparation of the constituent of indelible marking-ink. The prescription of this I have tried is: Dissolve in 3 ounces of liq. ammon. fort. $\frac{1}{2}$ oz. of nitrate of silver, and add $\frac{1}{2}$ oz. gum arabic and $\frac{1}{2}$ oz. archil. I did not soak the piece of cloth in the ink, but marked out on the cloth two groups of fine lines parallel to each other, the two groups being at right angles. It can be managed by periodically immersing the garments in some solution whose suspended particles are opaque to X rays. As it is obviously desirable that the sailors' and soldiers' garments now in use could be utilised, the experiments were made with a substance that could not only throw a shadow with X rays, but would also have some antiseptic properties.

How can Clothing be made Sterile?

During the Russo-Japanese War the Japanese made an effort in their Navy to deal with the question by trying to make their crews don clean garments prior to an action. During the present war, British naval surgeons have done good work in persuading their ships' crews to wear clean, or even sterilised, clothing when an engagement is imminent. To attain an aseptic ideal it would be necessary to have sterilised clothing always ready when the ship is at sea; further, that the action suit is accessible. To be really accessible provision must be made for each man's clothing to be stored at the action station itself, in order that he could quickly effect a change when necessary. But to enable an aseptic ideal to be attained the State must provide a complete change of clothing for each man, just as they provide him during hostilities with a suit of warm clothing for the winter. The suit would then be under the absolute control of the responsible person in the ship, who would see that it was always ready sterilised for use. This aseptic ideal could be carried out in the Navy, but it would be useless in the trenches, where clothing is so quickly contaminated by the surroundings.

In the Army the change of clothes could be kept at the bath house. On their way to the trenches the unit could change into their "trench clothes," and on their return from the trenches they could, after their bath, exchange into their other suits. After the "trench clothes" have been baked, washed, and dried, they can be immersed in the antiseptic solution, and after drying they will be ready for a further spell in the trenches.

Instead of having the antiseptic in solution, perhaps it may be possible to have some volatile chemical which, when placed in the steriliser or baking chamber, would volatilise with heating and impregnate the clothing.

Experimental Work.

My experiments aimed at trying to find a single substance to treat the "action clothes" which would satisfy the following requirements: (1) would make the garments (or fragments of same) impermeable to X rays; (2) would have some antiseptic properties; (3) would contain some antiseptic which was non-irritating to the tissues; (4) would contain some antiseptic which was non-irritating to the skin. I soaked

strips of flannelette in the following solutions respectively: pot. permanganate, 1:5000; hydrargyrum perchloridum, 1:1000; tinctura benzoin. co.; aqueous solution of borsal (equal parts of salicylic acid and boracic acid); and boracic acid, saturated solution. These strips were dried, laid in a row, and X rayed. The strip soaked in tinct. benzoin. co. showed the densest shadow, while that treated with the borsal was next best in density. As a medium similar to borsal seemed to be the easiest one to work with I decided to experiment with a modification of this. Salicylic acid by itself is not very soluble in water. If, however, borax be added it is readily soluble. The solution I used was: R Boracic acid, gr. xv.; salicylic acid, gr. xv.; borax, gr. xxiv.; aq. ad 3i. This solution is referred to hereafter as "B.S.B."

1. To ascertain if B.S.B. is impermeable to X rays.—I had a case of acute extravasation of urine with urethral stricture, the scrotum being the size of a child's head. Ten days after the perineal cystostomy I soaked a piece of sterile white gauze in B.S.B. solution and introduced it into the deep sinus. The scrotum (with the gauze packed in) was X rayed, when the shadow was easily distinguished.

2. To ascertain if B.S.B. has antiseptic properties.—The B.S.B. was made up as if it were an ordinary medicine—i.e., the dispenser made up the mixture with the ship's tap-water in an ordinary medicine bottle. *Nothing was sterilised.* Three tubes of agar were obtained, together with some pus from a septic wound which contained staphylococcus and streptococcus. The agar tubes were sown as follows: Tube *a* with 1 platinum loopful of pus only; Tube *b* with 1 platinum loopful of pus and 1 platinum loopful of the B.S.B. solution; and Tube *c* with 1 platinum loopful of the B.S.B. solution only. At the end of 48 hours' incubation the results to the naked eye were: Tube *a*, profuse growth; Tube *b*, growth, but nothing like so much as in Tube *a*; Tube *c*, no growth whatever. Therefore, subject to confirmation, it may be assumed that B.S.B. solution has some antiseptic properties.

3. To ascertain if B.S.B. is non-irritating to the tissues.—The piece of gauze soaked in B.S.B. solution, packed into the scrotal sinus, as mentioned previously, was allowed to remain for 24 hours, when it was removed. It caused no discomfort, there was no caustic effect, and I think it materially helped granulation.

4. To ascertain if B.S.B. is non-irritating to the wearer's skin.—I soaked a woollen undervest in the solution, and after it was dry I wore it continuously for five days. During this period I was perspiring profusely in a superheated theatre while operating. It produced no discomfort whatever, nor did any rash appear. The perspiration was absorbed from the undervest normally after I had ceased perspiring.

My reason for publishing such an incomplete note is the difficulty of doing experimental work on board ship, and it will be some considerable time before I can do anything further. To only see the sepsis following some of these dreadful shell injuries is quite sufficient to stimulate one to try to think of prophylactic measures.

The experiments detailed require confirmation; most probably other substances which will answer the required purpose better will be suggested. I am hoping that Surgeon-General Sir William Watson Cheyne will think the subject worth following up.

Note by Surgeon-General Sir W. WATSON CHEYNE.

I received a copy of the essential part of this paper from Staff-Surgeon Willan early last August, but was not at that time able to take up the question as he wished me to do. The suggestions are certainly most important ones, and even if only one of them could be realised in practice it would be a great help to surgical treatment. There is no doubt that the retention of pieces of dirty clothing in wounds is one of the most potent causes of severe sepsis, and the possibility of removing them early would be a great advance; this would be still more valuable if the opaque substance were itself antiseptic, or at least carried an antiseptic substance along with it into the cloth.

Since I heard from Staff-Surgeon Willan I have made many inquiries and have thought much about the subject, with the result that I came to the conclusion that a research by any one individual was not likely to be fruitful, as so many processes and sciences were involved; at any rate, I did not feel capable of carrying out such a research myself. Hence I placed Staff-Surgeon Willan's suggestions before the Board of Scientific Studies; and I learn that it was much interested, and will, I hope, reach some satisfactory conclusion.

THE TOXIC ACTION OF DILUTE PURE SODIUM CHLORIDE SOLUTIONS ON THE MENINGOCOCCUS.

By CRESSWELL SHEARER, M.D., D.Sc., F.R.S.,
MILITARY HOSPITAL, DEVONPORT.

(Report to the Medical Research Committee.)

IN experimenting during the past season with a large number of freshly isolated strains of the meningococcus it was noticed that almost all of them were killed when placed for a short time in dilute pure sodium chloride solutions. The action of sodium chloride is most toxic to the meningococcus when the concentration of the salt is not below 0.85 per cent. and not much above 0.9 per cent. NaCl.

It was found that freshly isolated meningococci were more vulnerable than old laboratory cultures. While old laboratory cultures could sometimes resist the action of pure 0.85 per cent. NaCl for three or four hours, freshly isolated strains seldom resisted its action for more than 20 minutes.

It seemed remarkable that NaCl should be toxic for the meningococcus in that concentration to which this germ is accustomed in the fluids of the body. It is strange, moreover, it should be so sensitive to the action of sodium chloride, while at the same time it is able to resist for many hours the action of distilled water.

To demonstrate the toxic action of saline solution on the meningococcus, it is highly important to observe certain conditions in performing the experiment. It is essential, in the first place, that the NaCl used should be free from any impurity. In the second place, the meningococci must be added to such a quantity of the saline solution that any trace of salts brought over with them from the culture-medium will have no appreciable effect in antagonising the action of the NaCl. Thirdly, it is important that the saline is not unduly diluted below its proper toxic strength by the addition of too large a quantity of the emulsion containing the germs. In the fourth place, no agglutination of the germs into masses or clumps in the saline must be allowed. The saline is then unable to act on the germs in the interior of these clumps, so that all are killed. Care must be taken to shake up the germs thoroughly in the saline and avoid all clumping as much as possible.

I have found, as a general rule, from a large number of experiments that one or two drops of an emulsion (of 5000 million meningococci to the cubic centimetre in distilled water) is the proper quantity of emulsion to be added to 2 cubic centimetres of 0.85 per cent. saline to demonstrate the toxic action of pure NaCl effectively on the meningococcus.

The toxic action of a 0.85 per cent. NaCl solution on the meningococcus can be readily antagonised and rendered harmless by the addition of a trace of some bivalent salt such as CaCl_2 , with or without the addition of a small quantity of KCl. This is clearly shown by the following experiment, which has been repeated many times.

A 24-hour culture of a recently isolated strain of meningococcus "Lake" was emulsified in distilled water, a fairly thick emulsion being prepared (about 5000 million cocci to the c.c.). Into four sterile test-tubes capable of being placed in a centrifuge the following solutions with 25 c.mm. of the meningococcus emulsion were placed as follows:—

- (1) 2 c.c. sterile 0.85% NaCl.
- (2) 2 " " 0.85% NaCl + 0.004 c.c. $\frac{M}{1}$ CaCl_2 .
- (3) 2 " " 0.85% NaCl + 0.004 c.c. $\frac{M}{1}$ CaCl_2 + 0.01 c.c. $\frac{M}{1}$ KCl.
- (4) 2 " " distilled water.

Each tube was then thoroughly shaken to ensure thorough mixing of the solutions and the emulsion of cocci. They were put in the incubator at 37° C. for an hour and a quarter. They were then taken out and centrifuged hard for 15 minutes, and the deposit in each tube planted out separately in sterile fashion on a chocolate plate.¹ Fig. 1 shows the growth obtained on this plate after incubation for 24 hours at 37° C.

An examination of Fig. 1 shows that the meningococcus emulsion placed in the pure 0.85 per cent. NaCl—that is, the deposit from Tube (1) has failed to grow, and that this

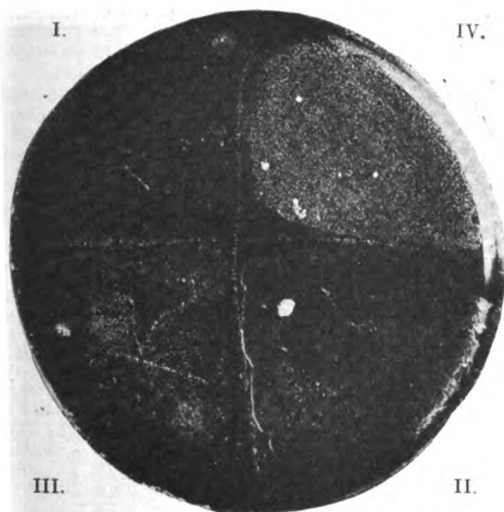
¹ Crowe's "chocolate" or blood-trypticar-glucose medium.

quarter of the plate (marked I.) planted out with this deposit is quite free of colonies. The cocci have been killed by the saline. In the opposite quadrant of the plate to this (II.), which has received a similar quantity of emulsion in 0.85 per cent. NaCl with the addition of a trace of CaCl_2 , a thick heavy growth of the meningococcus has taken place, covering the entire surface of this quarter of the plate. The CaCl_2 here has completely antagonised the toxic action of the NaCl. In Quadrant III., where the saline has received the same quantity of CaCl_2 as II., but also a little KCl, growth is still thicker (not very well shown in the photograph). In IV., where the germ was simply allowed to stand for an hour and a quarter in distilled water, growth is good, and the colonies cover closely the entire surface of this quarter of the plate.

This experiment clearly demonstrates the four following points:—

1. The toxic action of a pure 0.85 per cent. NaCl solution on the meningococcus.
2. The antagonistic action of a trace of CaCl_2 solution over the toxic action of the NaCl.
3. The accelerating action of KCl, when added to CaCl_2 in antagonising the toxic action of NaCl.
4. The relatively harmless action of distilled water on the meningococcus.

FIG. 1.



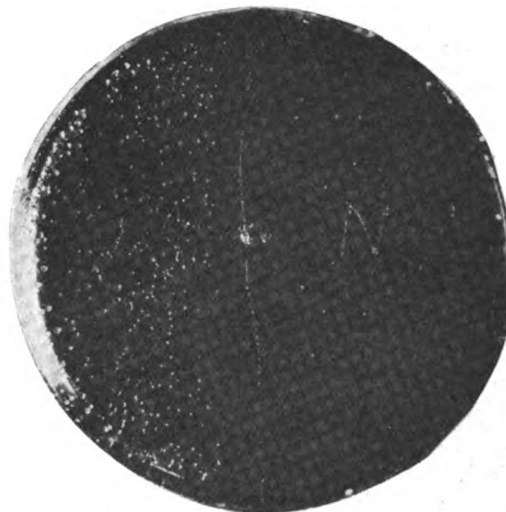
Photograph of the growth obtained on a plate of Crowe's chocolate medium after 24 hours incubation at 37°C ., showing the toxic action of a pure 0.85 per cent. NaCl solution on the meningococcus and the antagonistic action of a trace of CaCl_2 . I. Portion of plate planted out with emulsion of the meningococcus in 0.85 per cent. NaCl solution. No growth has taken place, all organisms being killed. II. Portion of plate planted out with a similar quantity of emulsion in 0.85 per cent. NaCl + a trace of CaCl_2 ; here the CaCl_2 has antagonised the toxic action of the NaCl, with a resulting thick growth of the meningococcus. III. Portion of plate planted out with a similar quantity of emulsion in 0.85 per cent. NaCl + CaCl_2 + KCl, with a resulting thick heavy growth, more than in II. IV. Portion of plate planted out with a similar quantity of meningococcus emulsion which had been allowed to stand for an hour and a quarter in distilled water; good growth.

So definite is this toxic action of 0.85 per cent. NaCl solution on the meningococcus, that it was found possible to make use of it very successfully to destroy all meningococci outside or attached to the surface of leucocytes, by simply washing these several times and allowing them to stand for a few hours in a small bulk of pure saline.² There is no doubt that in this toxic action of dilute NaCl solution on the meningococcus we are dealing with the poisonous action of the Na^+ ion, so extensively investigated by Loeb,³ Wasteneys,⁴ Osterhout,⁵ and others.

It is interesting to find that in the case of the meningococcus, as these investigators have found for other forms of life, this toxic action of NaCl is confined to relatively dilute solutions. In the case of the meningococcus it is essential

that the concentration of the NaCl should not be increased much beyond 0.9 per cent., as after this point its toxic action rapidly decreases. The use of a 1.5 per cent. NaCl solution (one of the standard strengths of this salt employed in opsonic work) is without almost any toxic action on the meningococcus, as shown by the following experiment.

FIG. 2.



Showing the toxic action of 0.85 per cent. NaCl solution on the meningococcus, in distinction to the relatively harmless action of a 1.5 per cent. solution of the same salt.

A fairly thick emulsion of a 24 hours' culture of meningococcus "Pryor" was made (about 5000 million cocci to the c.c.). To 4 c.c. of a pure 1.5 per cent. NaCl solution 25 c.c.m. of this culture in distilled water was added and thoroughly mixed. To 4 c.c. of 0.85 per cent. NaCl solution a similar quantity of the same emulsion was added and mixed. The two solutions were placed in the incubator at 37°C . for an hour. They were then taken out and centrifuged and the deposit planted out separately on the surface of a chocolate plate, as shown in Fig. 2. This figure shows the resulting growth obtained on this plate after

FIG. 3.



Showing the action of distilled water in failing to kill the meningococcus after 24 hours. D., Distilled water portion. N.S., 0.85 per cent. NaCl which has killed the germs.

24 hours incubation at 37°C . The 0.85 per cent. NaCl solution (marked N in the plate) has killed the meningococcus, while a good growth has been obtained on that half of the plate inoculated with a similar quantity of the same emulsion which had been exposed to the action of a 1.5 per cent. solution.

² See paper by Shearer and Crowe: The Role of the Phagocyte in Cerebro-spinal Meningitis, Proc. Roy. Soc., London. (To appear shortly.)

³ Loeb: Collected Papers, Pt. 2, Univ. Chicago, 1906.

⁴ Loeb and Wasteneys: Jr. Bio. Chem., vol. xli., 1915.

⁵ Osterhout: Zeit. f. physik. Chem., vol. lxx., 1910.

I should like to draw attention, finally, to an experiment made to determine the length of time the meningococcus may remain alive in pure distilled water, as compared with 0.85 per cent. NaCl solution. Into 4 c.c. of distilled water, and 4 c.c. of 0.85 per cent. NaCl respectively, 25 c.mm. of a meningococcus emulsion was placed. The two solutions were then incubated for 24 hours at 37° C., centrifuged down for an hour and planted out separately on a chocolate plate. In Fig. 3 is shown the resulting growth on this plate after 24 hours at 37° C. The saline, as usual, has killed the germs; while a considerable number of those in the distilled water have survived and have given rise to a fair number of colonies. This experiment clearly demonstrates the power of the meningococcus to resist the action of distilled water.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

CLINICAL SECTION.

Exhibition of Clinical Cases.

A MEETING of this section was held on Nov. 10th, Sir FREDERIC EVE, Vice-President, being in the chair.

Dr. F. PARKES WEBER showed a case of Thrombo-angiitis Obliterans (Non-syphilitic Arteritis Obliterans of Hebrews) affecting Three Limbs.

The man, aged 39, a Russian Jew, was the patient whose earlier history had been given in a paper on Thrombo-angiitis Obliterans.¹ In 1908, when he was aged 31, his right leg was amputated below the knee for commencing gangrene. The disease had commenced about two years previously, with pains in the right leg on walking of the usual "intermittent claudication" kind. There was the ordinary history of cigarette-smoking (15 to 20 cigarettes a day). Macroscopically the arteries of the amputated limb appeared to be rather hypoplastic, as had been observed in some other cases of the disease. The posterior tibial artery showed organised thrombus, containing pigment granules (? hæmosiderin). The upper part of the posterior tibial artery showed no thrombosis, but much narrowing of the lumen from a kind of endarteritis obliterans. The lumen of the lower part of the posterior tibial artery was likewise not obliterated. About the vasa vasorum surrounding it there was considerable cell-infiltration. One of the venæ comites of the middle part of the anterior tibial artery was obliterated by organised thrombus containing pigment granules (? hæmosiderin). About that time (1908) the patient seemed to have true psoriasis of the tongue, and simple cutaneous psoriasis of his trunk, limbs, and scalp still persisted. There was no evidence of disease in the thoracic or abdominal viscera. The brachial systolic blood pressure (in both arms) was about 130 mm. Hg. In July, 1912, owing to great and unyielding pain in the right stump, Dr. zum Busch amputated through the middle of the femur. In September, 1916, the patient was again admitted to hospital, having had for two years typical "intermittent claudication" on walking, in the calf muscles of his remaining leg. For the last six months or so he had suffered from pain and tendency to cyanosis, of the "pseudo-erythromelalgia" type, in the foot. There was no pulsation in the left dorsalis pedis artery. The left radial pulse could not be felt, and the artery was doubtless obliterated. The patient had for some time been subject to temporary feelings of coldness in that hand. The brachial systolic blood pressure in the right arm was 125 mm. Hg. The Wassermann reaction was negative. The knee-jerk was present and the plantar reflex normal. He had not quite given up his old habit of cigarette-smoking. Since then, by rest in bed, &c., there had been some improvement in regard to the turgid, erythromelalgia-like, congestion of the foot, but he needed morphine injections for sleep at night. He sometimes seemed to obtain relief by letting the leg hang down over the edge of the bed so that the foot became congested and purplish.

Dr. WEBER also showed a case of Progressive Spinal Muscular Atrophy (Duchenne-Aran) following Electric Shock with Positive Wassermann Reaction.

The patient presented the appearance of great muscular atrophy of both upper extremities and of the muscles connected with the shoulder-girdle and thorax. There was great loss of power in the shoulders and arms. He

could raise his left hand to his mouth, but could hardly raise his right hand. The wasting occurred first and was particularly noticeable in the intrinsic muscles of the hands. In both hands there was some contracture, more in the left than in the right. The atrophied muscles of the hands reacted very badly to electrical stimulation, the thenar muscles giving no definite reaction at all. His knee-jerks were exaggerated and, though he walked well, his gait was slightly spastic. There was no ankle clonus. The plantar reflexes were extensor. About March, 1910, he accidentally received a severe electric shock across the upper part of his body "from his left to his right hand" (750 volts, direct current). At first he seemed to suffer no ill-effects from it, but about 16 months afterwards he noticed that there was considerable wasting in his hands. The muscular atrophy slowly progressed until a few years ago.

There was no suspicion of any saturnism in the case and no history of syphilis could be obtained, but the Wassermann reaction had on two occasions been positive. The disease was clearly progressive spinal muscular atrophy. As usual, the patient was a male, of middle age when the first symptom was observed, and the hands were the first parts affected. Though he (Dr. Weber) had never heard of the disease following an electric shock, it was acknowledged to follow occasionally various kinds of traumata and shock, and he had been informed that in the present war it had been known to occur after "shell-shock." It was possible that a syphilitic taint occasionally acted as a predisposing cause by diminishing the resistance of the central nervous system.

Dr. WEBER also showed a case of Chorea Rhythmica in a man.

The patient, a man aged 38, had rhythmic movements of the neck and both arms which, under observation, became increased in rate, amplitude, and force. They quieted down somewhat when he was left to himself, and ceased altogether during sleep. Their rate was usually about 100 per minute. The movements became more violent when anyone tried to restrain them by force in any way or when the patient himself caught hold of a rail in endeavouring to walk. He said that he could not walk, but he could move his lower extremities when sitting or lying down. He gave one to understand that he could speak only in a very slow and broken (jerky) manner, as if battling against some obstruction in articulation. On the other hand, he could eat, drink, and dress himself fairly well when left alone without any assistance. He was not losing weight, and was apparently free from any visceral disease. His knee-jerks were exaggerated; no ankle clonus could be obtained; plantar reflexes were flexor. The speech difficulty commenced in December, 1915, and about February, 1916, he gradually became unable to walk. The chorea rhythmica apparently began about July, 1916.

Obviously, psychical factors played an important part in the case.

Mr. P. B. ROTH showed a case of Enlargement of the Lower Jaw (! Leontiasis Ossea).

The patient, a woman aged 56, was first seen in September of this year, complaining of pain in the lower jaw. She stated that in July she had several teeth out because of abscesses, and since then the gums seemed to have swollen. She complained at times of a shooting pain like a hot needle on the left side of her chin. Ten years ago, while carrying a heavy flower-pot in both arms, she stumbled, and fell with her chin against the pot. Her chin was badly bruised, and since then it had been getting larger. Examination showed a remarkable enlargement of the chin and lower jaw; the enlargement was more or less uniform, though the left side was rather more prominent than the right. All the lower teeth except a molar at the back had been removed. The alveolus was double or treble its normal size. A radiogram taken by Dr. W. Ironside Bruce showed a general enlargement of the horizontal ramus on each side.

Mr. ROTH also showed a case of Fracture of Both Patellæ in a woman. That on the right side was caused indirectly and had occurred recently; union had followed operation. The fracture of the left patella was due to direct injury. It took place eight years ago, the patient seeking no treatment but resting in bed for two months. It was a Y-shaped fracture, the patella being separated into an upper and outer and two lower and inner fragments. There was a gap of 2½ inches and no sign of bony union. Although the quadriceps had been functionless for eight years there was no contraction of the hamstrings.

Dr. H. BATTY SHAW showed a case of Congenital Heart Disease.

The patient, a man aged 32, had from birth suffered from dyspnoea and cyanosis. A murmur corresponding to patency

¹ Quarterly Journal of Medicine, July, 1916 (ix., last paragraph on p. 296).

of the septum ventriculorum could be heard over the præ-cordium. The fingers and toes were clubbed. Although the characteristic periosteal changes and osteophytes of pulmonary hypertrophic osteo-arthritis were absent, the bones of the forearms and legs were apparently thickened, and the fingers were broad and large.

It was suggested that in this condition the characteristic changes may disappear in time, the periosteal changes and osteophytes becoming merged into the somewhat denser bone of the shafts.

SECTION OF ANÆSTHETICS.

Heart Failure during Operation.—Composition of Air under Masks during Ether Anæsthesia.

A MEETING of this section was held on Nov. 3rd, Mr. GEORGE ROWELL, the President, being in the chair.

Mr. W. M. MOLLISON related a case of Heart Failure during an operation for the removal of tonsils and adenoids, heart massage through abdominal incision, and recovery. The patient, a boy aged 6 years, was subject to asthma, but otherwise was normal. The C.E. mixture was taken from an open mask and light anæsthesia reached in an ordinary manner, after which the left tonsil was removed. There was slight struggling during the removal of the right tonsil, after which the boy was turned on to the left side and the adenoids were curetted; during this there was no movement. Immediately after it was obvious that the boy had collapsed, with dilated pupil, absent corneal reflex, and no respiration. After all local and general restorative means, artificial respiration, injection of pituitrin into the heart through the chest wall, &c., had failed, the abdomen was opened and a hand inserted between liver and diaphragm. The heart was easily felt and no trace of movement detected in it. It was massaged at the rate of about 90 pressures a minute. Respiratory movements began and continued intermittently; the colour improved and the pupils diminished. The heart, however, did not contract. Pituitrin (1 c.c.) was injected into the heart; massage was renewed, and after about 20 squeezes the heart began to beat strongly. The abdomen was closed and the patient was removed to bed, where saline was infused. After an hour he became restless with choreic movements of the limbs. For seven days he was more or less unconscious, with rigidity of limbs or choreic movements, a frequent shrill cry, and incontinence of feces and of urine. At one time there were violence and tearing of the bed-clothes. There were, in fact, symptoms of severe cerebral irritation, due presumably to the damage done to the brain during the cessation of circulation. At the end of 14 days there was much improvement, and eventually the boy left the hospital well at the end of six weeks. Mr. Mollison gave a résumé of previously recorded similar cases, and concluded that probably heart massage should not be postponed longer than five minutes after apparent stoppage.

Dr. M. S. PEMBREY read a paper by Dr. F. G. SHIPWAY and himself upon the Composition of Air under Masks during Ether Anæsthesia. After recording the work of Dreser and that of Bryant and Henderson with Rovsing's bag, a series of figures obtained from observations under Schimmelbusch's mask and under Clover's inhaler with narrow and wide bores was given. Control observations with no anæsthetic gave, with the open mask, a range of 2.52 to 3.13 volumes per cent. of CO₂ and 17.94 to 17.06 oxygen, the lowest being 16.97. The closed methods showed much higher readings for CO₂ and considerably lower for oxygen. It was found that, apart from preliminary injections, four factors might affect the activity of the respiratory centre: the pressure of (1) ether, (2) carbon dioxide, (3) oxygen, and (4) the temperature. Anæsthesia depended upon a definite pressure or tension of ether in the blood and tissues, sudden variations above introducing the danger of overdosage, those below tending to too light a narcosis. Too much importance had been attributed to acapnia, and closed methods providing for a large percentage of CO₂ with rebreathing introduced the danger of too little oxygen. The respiratory centre could be over-stimulated by the pressure of CO₂ and also by the effect of want of oxygen, whether produced by direct action or by acid products formed in the tissues. Sudden variations such as obtain with closed methods produce corresponding changes in the depth of narcosis and for the avoidance of reflex responses a deeper degree than is necessary is therefore maintained. Deeper breathing than is necessary means

extra work thrown upon nervous, muscular and vascular systems and has the disadvantage in addition that larger quantities of ether are taken into the alveoli of the lungs.

The papers were discussed by the PRESIDENT, Dr. J. BLOMFIELD, Dr. Z. MENNELL, Dr. LL. POWELL, and Mr. ASHLEY S. DALY.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—

A clinical meeting of this society was held at the West London Hospital on Nov. 3rd, Dr. E. Arthur Saunders, the President, being in the chair.—Mr. Aslett Baldwin showed a patient from whom he had removed Renal Calculi weighing 3½ ounces. The affected kidney was not removed.—The remainder of the meeting was occupied by a demonstration of cases by the staff of the Hammersmith Military Orthopaedic Hospital and Fulham Military Hospital. Mr. W. H. Trethowan: 1. Case of Dislocation of Semilunar Bone of the Right Wrist; treatment by removal through incision over the anterior annular ligament. 2. Case of Spiral Fracture of the Left Tibia treated by plating and plaster-of-Paris. 3. Fracture of the Right Tibia, ununited, with dropped foot and genu recurvatum; osteotomy of tibia; fragments plated and put in plaster-of-Paris.—Captain Naughton Dunn, R.A.M.C.: 1. Gunshot Wound causing Complete Musculo-spiral Paralysis; transplantation of tendons (a) of pronator radii teres into extensor carpi radialis longior and brevior; (b) palmaris longus into extensor longus pollicis; (c) flexor carpi radialis to extensor communis digitorum; and (d) flexor carpi ulnaris to extensor carpi ulnaris. 2. Gunshot Wound of Right Elbow; elbow-joint excised; treatment by movement and massage; result—limitation of elbow movement to 20° at 140°; treatment by Captain Dunn—elbow forcibly flexed to 45° under anæsthetic and collar and cuff applied. 3. Fracture of Left Elbow; treatment by fixation in acute flexion two months; now has ununited fracture of external condyle with free painless movement up to 170°.—Mr. D. McCrae Aitken also showed cases.—In addition a collection of Plaster Casts, Splints, and Oil Paintings representing cases were shown.—The cases were discussed by Mr. Baldwin, Dr. J. B. Menzell, Mr. Aitken, and Mr. O. L. Addison.

LIVERPOOL MEDICAL INSTITUTION.—A meeting

of this society was held on Nov. 9th, Dr. C. J. Macalister, the President, being in the chair.—Dr. J. H. Abram read a note on a case of Continued Fever. The pyrexia lasted many months in spite of the fact that the patient was otherwise in good health. Various possible diagnoses were discussed, but the high temperature with an infrequent pulse seemed to support a diagnosis of typhoid fever in spite of the absence of all the usual signs of the disease.—Dr. J. Murray Bligh read a note on Congenital Syphilis in a child aged 11 years. The family history, positive Wassermann reaction, and pathological findings seemed to indicate syphilis, and the question arose, How far one should allow oneself to be led by a positive Wassermann reaction in the absence of other usual and definite symptoms of the disease.

—Dr. Llewellyn Morgan read a very complete and interesting paper on Dysentery. He discussed the modern theory of the causation of acute dysentery, amœbic and bacillary, and contrasted the pathological changes found in the colon in each variety. He discussed the treatment of amœbic cases with emetine, and considered that a trial of this drug should be made in all cases, and if no improvement took place in 48 hours a diagnosis of the bacillary form of the disease was the more probable. Of chronic dysentery four types were described: (1) the latent type; (2) the wet type; (3) the muco-purulent type; and (4) the hæmorrhagic type, and the symptoms and appropriate treatment of each were discussed. Emetine in the form of Alcresta Ipecac. was found to give excellent results in amœbic cases, and even in doses of 1½ grains given by the mouth caused no vomiting. In the diarrhoeic type astringents were of little service. In the muco-purulent type rectal injections were suitable and normal saline seemed to give as good results as anything else. All injections were painful and were not tolerated in the hæmorrhagic type of the disease. Belladonna as an anodyne gave better results than morphia. In conclusion the military regulations which are in force to prevent the disease from becoming endemic in this country were described.—The paper was followed by a discussion, in which many members took part.

Reviews and Notices of Books.

The Sex Complex: A Study of the Relationship of the Internal Secretions to the Female Characteristics and Functions in Health and Disease.

By W. BLAIR BELL, B.S., M.D. Lond., Gynaecological Surgeon to the Royal Infirmary, Liverpool; Hunterian Professor, Royal College of Surgeons of England. London: Baillière, Tindall, and Cox. 1916. Pp. xx. + 233. Price 12s. 6d. net.

THIS is a really good book, the outcome of original work, careful study, and lucid thought devoted to his subject by its able author for well-nigh ten years. It will surely take high rank among the scientific works that medicine has given to the present century. In his previous writings and the Arris and Gale Lectures delivered by him in 1913 Dr. Blair Bell's object was to show that the reproductive functions are directed and controlled by all the organs of internal secretion acting in conjunction, rather than by the gonads alone, and that thus there exists a definite genital system. In his present preface he writes as follows: "There are, of course, still differences of opinion concerning the details; and it is for this reason, as well as because of the intense importance of the subject to physiology and to practical gynaecology, that the investigations and communications referred to, welded together, amplified, and largely rewritten, are submitted for consideration in book form in the hope that further interests may be stimulated, fresh facts noted and recorded, and existing opinions corrected or confirmed."

The author makes it quite clear in his preface and elsewhere in the book that the internal secretions are as closely connected with the male as with the female genital functions, and this seems to some extent to be implied in the chief title. But the book is mainly based on the author's special work on the genital system of woman, and for this reason, as well as because the word "complex" has lately been prominently employed in a very different "sexual" context by the so-called "psycho-analysts," it could be wished that it had been entitled in chief "The Genital System," thus representing more exactly and fitly the contents of the work and precluding any possible misconception of their nature at first glance.

In the first part, or about half of the work, the author deals with the morphological, physiological, and psychological aspects of his subject; while the second part treats of the pathological side of these questions. All through the book, which abounds with evidence, much of which is original, in support of the view that the internal secretions are largely concerned in producing and maintaining the feminine characteristics, and ensuring the full development of the genital organs, Dr. Blair Bell, while making proper use of the scientific imagination, adheres faithfully to scientific method. He draws his conclusions with caution, duly considering the worth of the facts adduced; not straining his inferences to include more than the facts may justly bear; and clearly recognising the difference between a merely probable inference therefrom, and a deduction which has been tested by further facts of observation or experiment. This just caution is seen not only when he is dealing with strictly so-called "physical" matters, but also in his critical handling of the psychological side of his subject, which, although less capable of being dealt with demonstratively, is nevertheless amenable to scientific treatment.

No abstract of the greater part of this work which deals with the anatomy and physiology of the subjects treated can be given within the space of this review; nor, indeed, is its matter, for all the clarity with which it is set forth, in any way capable of such condensation. The book must be studied from start to finish; and it will be read with ease and great interest by those who have any acquaintance with the classic work of Professor Starling. Suffice it to say here that the author gives separate and detailed accounts of the secretions of each of the endocrine organs, and of their correlations in regard to the genital functions; and that he follows a similar arrangement in considering the relation of pathological conditions of the internal secretions to the genital organs and their functions. Special attention, however, may be drawn to those parts of the

book which concern the psychological characteristics, and the sexual and reproductive psychoses and neuroses in relation to physiological and pathological processes. For these sections are very weighty, in spite of the brevity that might cause them to be made light of. Dr. Blair Bell has evidently not written this part of his book, any more than the rest of it, without adequate knowledge and due reflection. He rightly says at the outset: "Completely to explain sex psychology we should, in the first place, be obliged to study the nature of psychical processes. This difficult task I shall not attempt it is one which has for its primary basis either purely material or partly 'spiritual' conditions. By saying 'partly spiritual'—for want of a better term—as opposed to 'purely material,' I leave undecided the general aspects of the stormy disputation concerning the connexion of 'spirit' with matter; yet any views I shall put forward will not be affected—they are equally applicable whatever may be the opinion held concerning this question. I cannot, however, hope to accommodate those who assert that the mental functions are entirely spiritual. Without indulging in profitless discussion, I shall take it for granted that all engaged in biological pursuits, to whom my statements are addressed, hold the view that the psychical functions are partly or solely dependent on physiological processes, and it is on this belief that my own views are based. I shall, moreover, not enter into any discussion of what I have described as 'partly spiritual' factors, whether they exist in reality or not; I shall merely deal with the material factors which, it is certain, influence mental processes." These and some following remarks by Dr. Blair Bell recall the introductory words of the philosopher-physician Cabanis in his once well-known, but now neglected, "Rapports du Physique et du Moral de l'Homme," which he first read in the form of lectures before the Institut de France at the close of the eighteenth century; and it may be of some interest to note that Cabanis in this work gives certain indications of possible light to be thrown in future on the mental effects of then unrecognised physiological processes in internal organs.

In discussing the subject of feminine characteristics Dr. Blair Bell shows that he has no slight knowledge of it, and must be credited with thorough impartiality even by such as may decline to agree with him. In coming to the conclusion that woman's special psychological characteristics are undoubtedly bound up with her physiological nature he does not fail to emphasise strongly the fact that the individual is a tool of nature—a unit in a vast scheme. The "man is not superior to the woman in any possible sense of the word; his functions lie in one direction, the woman's in another, and each is the reproductive complement of the other."

We think that the author has achieved in this book something more than he indicates by the hope expressed in his preface. He has gone far towards establishing the fact of sex differentiation being largely dependent on the influence of the internal secretions in woman and in man as well. The work is not only very suggestive, but also of great positive value.

Defective Children.

Edited by T. N. KELYNACK, M.D. Vict. London: John Bale, Sons, and Danielsson, Limited. 1915. Pp. 462. Price 7s. 6d.

To this symposium in honour of the defective child many well-known authorities have contributed valuable articles. Among the more important of these are the chapters on defects of vision, speech defects, the deaf child, cardio-vascular defects, and defective growth. In separate chapters the various aspects of mental defect, physical deformities, and crime are suitably dealt with, while the State and municipal efforts made in different countries to cope with the practical difficulties of treatment are described in a series of seven useful chapters. In this very full and complete account of the defective child we notice only one omission of practical importance, and that is in connexion with those extremely difficult borderland cases which are so commonly met with in the families of intellectuals and which are sources of so much anxiety to educational as well as medical authorities. The case of these unhappy children is incidentally referred to in many chapters, as, for instance, in that general account of the mentally

defective child by Dr. Hamilton C. Marr and in that on the criminal child by Dr. William C. Sullivan, but the importance of the subject appears to us to demand more preferential consideration. In the opening chapter Dr. E. W. Hope contributes a very valuable article on the relations of the public services to the treatment of defective children. The wide experience of the author of this article in connexion with the practical solution of the problem involved entitles his contribution to the most respectful consideration. In Liverpool, where he exercises jurisdiction as medical officer of health and chief medical officer to the Education Committee, much pioneer work has already been done in municipal organisation generally, and more particularly with respect to those branches of the public service which are concerned with the medical supervision of young children up to the end of school age. In London, where the medical inspection of school children has now reached a really high standard of development, it is unfortunate that there is practically no correlation with the equally important supervision of the child under school age. The last-named work has been undertaken in particular instances by voluntary organisations, and the recent circular of the Local Government Board (Maternity and Child Welfare) empowers local authorities to undertake schemes for co-ordinating this work. In London there arises the difficulty that the circular does not provide for correlating the work already done by the London County Council with that of the local authorities—viz., the public health authorities of the component boroughs. The whole question of the organisation of our available resources for dealing with the problems of the State control of the defective child deserves even fuller consideration than Dr. Hope has meted out to it in his introductory chapter. Dr. Kelynak deserves the thanks of all those interested in the subject of the defective child for bringing much valuable information into an available form for the general as well as the special reader.

JOURNALS.

Journal of Anatomy and Physiology. Conducted by Professor ALEX. MACALISTER, Professor ARTHUR THOMSON, Professor ARTHUR KEITH, and Professor ARTHUR ROBINSON. Vol. L. Third Series, Vol. XI., Part 4. July, 1916. London: Charles Griffin and Co. Annual subscription, 21s. post free.—This, the final part of the fiftieth volume of the journal, cannot be described as a particularly interesting number, since so much of it is devoted to the recording of isolated anomalies. Mr. F. A. Hepworth describes an unusual peritoneal sac which, lying upon the left side of the abdominal cavity, contained the bulk of the coils of small intestine.—Dr. Martin R. Chase records a case of congenital deficiency of the pericardium which affected the left side of the parietal portion of the pericardium.—Dr. Edward Reynolds gives details of three cases of reappearance of ovarian peritoneal sacculations in the human female, such cases being in some respects reversions to the primitive condition of a well-developed bursa ovarica.—Captain John T. Morrison, R.A.M.C., contributes a short illustrated account of a palmaris longus muscle with a reversed belly, forming an accessory flexor muscle of the little finger.—Dr. James F. Gemmill and Mr. James Stewart illustrate and describe a case of omphalopagus twins in the human subject. The visceral conditions in these twins are of considerable interest and are well illustrated. The figure of the external appearance of the specimen is not so satisfactory and it is strangely reminiscent of a sixteenth century woodcut.—Two papers of a rather wider interest are those by Dr. Jose Martins Barbosa on the structure of the lung of *Delphinus delphis* and Dr. H. Leighton Kesteven on the relation of the amphibian parasphenoids.—The issue contains the index of Vol. L.

Indian Journal of Medical Research. Vol. IV., No. 1.—The first of the 13 articles in this number of the *Journal* is by Major D. McCay, I.M.S., professor of physiology in the Calcutta Medical College, in conjunction with three other collaborators—namely, Assistant Surgeons Rai Bahadur S. C. Banerjee, Assistant Professor, Lal Mohan Ghosal, and Madan Mohan Dutta, demonstrators in the physiological department of the Medical College. It is entitled "Observations on the Sugar of the Blood and the Sugar in the Urine in Varying Conditions of Health in the

Bengali." The observations were made in the course of an inquiry into the causes of the prevalence of diabetes in India under the direction of the Scientific Advisory Board and at the expense of the Indian Research Fund Association. It appears that the Bengali, even when not luxuriously fed, owing to the highly carbonaceous diet on which he lives, reveals a higher sugar content of the blood than the European, that this excessive sugar floating in the blood, so long as ordinary health conditions obtain as regards absorption, assimilation, and oxidation, gradually leads to a deposition of fat unless the extra sugar of the blood be got rid of by means of ordinary physiological activities of the body, muscular exercise, body-heat, and so on. As the energetic youthful period of life passes increase occurs in the percentage of sugar of the blood, and further storage of fat follows. This goes on until a time comes when the hyperglycæmia becomes so marked that the threshold stimulus for the kidneys is passed and these organs begin to excrete sugar to such an extent that even the ordinary clinical tests for glycosuria are obtained. To make matters worse, not infrequently "the sugar-sodden system of the successful survivor in the struggle of life gives his remaining powers of carbohydrate utilisation a knock-out blow by the consumption of large quantities of sweetmeats." Among the poorer working-class of Bengalis, energetic and lean, the administration of relatively large amounts of glucose has little or no effect in raising the sugar content of the blood, whereas in the fat and indolent exactly the opposite conditions obtain.—Dr. M. B. Soparkar, of the Bombay Bacteriological Laboratory, discusses the cultivation of the tubercle bacillus directly from sputum and from post-mortem material.—The fallacies of certain modifications of the Wassermann reaction due to variation in complement are considered in a brief article by Major H. C. Brown, I.M.S., and Dr. K. R. K. Iyengar, of the Central Research Institute, Kasauli.—In continuation of previous work on the same subject, Captain J. Morison, I.M.S., and Assistant Surgeon E. C. R. Fox contribute another report on the detection of the origin and mode of spread of an epidemic, and dealing with diarrhoea, dysentery, and cholera occurring in Poona, illustrated by a series of tables, charts, and maps.—A paper by Major Clayton Lane, I.M.S., on the Genus *Dacnitis*, Dujardin, 1845, is illustrated by excellent plates.—Lieutenant-Colonel J. W. Cornwall, I.M.S., of the Pasteur Institute of Southern India, Coonoor, supplies an interesting contribution to the study of kala-azar, in continuation of his previous investigations. In the present paper he deals with the question, Can the Bug Transmit the Infection of Kala-azar? and this he answers, as a result of his experiments, in the negative. All attempts to make bugs infected with leishmania transfer the infection by biting, either to a sterile culture medium or to animals, failed. *Cimex rotundatus* cannot transmit either kala-azar or oriental sore by biting; and *Conorhinus rubrofasciatus* is not concerned in the spread of kala-azar; viable forms of *L. donovani* and *L. tropica* are not passed in the faeces of *Cimex rotundatus*.—Major S. R. Christophers, I.M.S., describes a new anopheline with unspotted wings from Mesopotamia, and Mr. P. R. Awati, medical entomologist, furnishes another instalment of his *Studies in Flies*, with contributions to the study of specific differences in the genus *Musca*, dealing on this occasion with "structures other than genitalia."—Of two articles by Dr. Agnes Scott, one is a Contribution to the Study of Osteomalacia in India, and the other on the Calcium Content of the Urine and Blood, with special reference to its Variation in the Condition of Osteomalacia.—The Experimental Production of Congenital Goitre is considered by Major R. McCarrison, whose former work on this subject is well known. Details are given of the experimental production of congenital goitre in goats, illustrated with several plates. His former conclusions were confirmed that this form of goitre is due to the action on the foetal thyroid of toxic substances derived from the maternal intestine. These substances are the products of micro-organisms, originating in faecally contaminated soil, which are conveyed to man and animals by infected food and water.—The concluding article of the number deals with malaria in Muscat, and is from the pen of Major Clifford A. Gill, I.M.S.; it is illustrated by several plates and maps, and gives the experience of the author while attached to troops engaged in guarding Muscat from a threatened descent of Arab tribesmen. He discusses fully both the curative and preventive aspects of malaria in this region.

THE CONTROL OF THE FOOD SUPPLY.

THE new Regulations made by Order in Council for the control of the food-supply of the country were published in the *London Gazette* of Friday, Nov. 17th. Under them extensive powers are conferred on the Board of Trade for the control, manufacture, sale, and use of food. The Order takes the form of additions to the Regulations under the Defence of the Realm Consolidation Act, 1914. By the new Regulations the Board of Trade receives powers and discretion to make Orders of any general, special, or local nature to maintain the food supply of the country, while obtaining punitive powers against those who fail to comply with any of the Provisions of the Regulations.

The first seven Provisions, which fall under the additional Regulation 2. F., have the following bearing with reference to any article of commerce the maintenance of which is held by the Board of Trade to be "important as being part of the food supply of the country or as being necessary for the wants of the public or for the wants of any section of the public":—

I. A person shall not waste or unnecessarily destroy any article to which this provision is applied.

II. and III. Where the order applying these provisions to any article specifies the purposes for or manner in which the article is to be used or contains any directions or regulations as to the manufacture or production of the article, a person shall not (subject to any conditions contained in the order) use or manufacture the article otherwise.

IV. and V. Where the order contains any directions or regulations as to the mode of sale or distribution of the article or as to market operations, with a view to securing that the available supply of the article is put to its best use throughout the country or in any locality and with no unreasonable inflation of price, all persons concerned in the sale or distribution of the article shall comply with the directions or regulations.

VI. A person shall not (subject to any exceptions contained in the order applying this provision) directly or indirectly sell or offer for sale any article to which this provision is applied at a price exceeding by more than the amount named in the order the corresponding price of the article at a date specified in the order (the corresponding price to be settled in case of difference by the Board of Trade); and where the consideration for any sale or offer consists wholly or partly of any conditions made or offered to be made in connexion with the transaction, or is otherwise not of a pecuniary character, the value of the consideration or such part thereof as is not of a pecuniary character, shall, for the purposes of this provision, be taken into account in determining the price of the article.

VII. All persons owning or having power to sell or dispose of any article to which this provision is applied or any stocks thereof shall, if required by the Board of Trade, place at the disposal of the Board the article, or the whole or any part of the stocks thereof as may be required by the Board on such terms as the Board may direct, and shall deliver to the Board or to any person or persons named by them the article or stocks in such quantities and at such times as the Board may require.

Such compensation shall be paid for any article or stock so requisitioned as shall, in default of agreement, be determined by the arbitration of a single arbitrator appointed in manner provided by the order applying this provision; but in determining the amount of the compensation the arbitrator shall have regard to the cost of production of the article and to the allowance of a reasonable profit without necessarily taking into consideration the market price of the article at the time.

An addition to the Regulations, 2. G., deals with the returns of stocks and prices; this gives the Board of Trade powers with respect to any article of commerce to obtain a return as to the stocks of the article held, or consigned to, or under order to a manufacturer. The Board can also demand from him information as to his contracts, prices paid or received, cost of production of the article in question, and the names of his clients. For the purpose of testing the accuracy of the returns an authorised officer of the Board may enter any premises of the manufacturer, or of any one dealing with the article, who has failed to make a demanded return, and may inspect and examine books on the premises, as far as may appear necessary. Refusal to make a return, falsely answering any question, or obstructing the authorised officer of the Board of Trade will be made penal offences. Unfair publicity is guarded against, the disclosure of information obtained under the new Regulations being a summary offence against the Regulations.

In a third addition to the Regulations, 2. H., the Board of Trade obtains powers to hold an inquiry with respect to any special case, and can appoint such persons as they may choose to hold the inquiry and to take evidence on oath.

The Control of Milk and Flour.

Two Orders under Regulation 2. F. have already been made.

The Milk Order, which does not deal with milk preparations or dried or condensed milk, enacts that:—

(1) The price may not be raised above that paid at Nov. 15th, 1916.

(2) The price may not exceed by more than a specified amount the price in the corresponding month before the war. This amount in the case of retail milk is 2d per quart. The specified amounts that may be added to the pre-war price in respect of wholesale milk are 6½d. per imperial gallon delivered on the premises of the buyer where the conditions of sale include an obligation to deliver not less than a specified minimum, and 5½d. per imperial gallon in other cases.

The Order, with certain exemptions, comes into force on Nov. 27th.

The Milling Order fixes the following schedule for the percentage extraction of flours in the United Kingdom:—

| | Per cent. | | Per cent. |
|-------------------------------------|-----------|---|-----------|
| English | 76 | No. 1 Northern Manitoba Old Crop | 76 |
| Choice Bombay | 78 | No. 2 Northern Manitoba Old Crop | 75 |
| Australian | 78 | No. 3 Northern Manitoba Old Crop | 73 |
| Blue Stem | 78 | Choice White Karachi | 75 |
| Walla Walla | 75 | Soft Red Karachi | 75 |
| No. 2 Red Western | 76 | Rosafé 62 lb. | 73 |
| No. 2 Red Winter | 74 | Baril 61½ lb. | 74 |
| No. 2 New Hard Winter (1916) | 76 | Barletta-Russo 61½ lb. | 74 |
| No. 1 Northern Duluth | 75 | | |

The Order comes into force for milling on Nov. 27th, and after Jan. 1st, 1917, only flour separated according to the schedule may be employed, any appreciable hoarding being thus prevented.

THE CONTROL OF VENEREAL DISEASES.

Quacks and the Question of Notification.

THE Society of Medical Officers of Health discussed the problems of prevention of venereal diseases at their meeting last week. Dr. John Robertson, the President, expressed his opinion that after a scheme for effective and gratuitous treatment had been successfully brought into being the question of compulsory notification might suitably arise. At present any form of notification would simply drive the patient to the quack. Dr. J. J. Buchan, medical officer of health for Bradford, alluded to the alarming prevalence of quackery in industrial districts and the need for repressive legislation. He agreed with the President that notification should stand over until the campaign was further advanced.

The County of Surrey Scheme.

The Surrey County Council authorised its Public Health Committee last week to proceed with a provisional scheme for the diagnosis and treatment of venereal diseases. It is proposed that (1) all means of diagnosis be provided in the laboratories of certain hospitals in London; (2) means of treatment for most patients residing in the county be provided in certain hospitals in London, and for the remainder in the Guildford County Hospital and the Croydon General Hospital if suitable arrangements can be made. It is expected that the County Councils of London, Bucks, Essex, Herts, Kent, Middlesex, and Surrey, and the County Borough Councils of Croydon, East Ham, and West Ham will participate in the scheme for the use of hospitals in London. The preliminary negotiations with the hospitals are to be left to the London County Council. Each authority is to contribute in proportion to the estimated use of the facilities at the beginning of 1917, payments to be adjusted at the end of the year. The details of the scheme itself are still under discussion. The total cost for the administrative County of Surrey for the first year is not likely to exceed £5000, of which, of course, £3750 will be recoverable from the Local Government Board.

The Dorset County Scheme.

The county medical officer is in negotiation with the committees of the following hospitals with a view to the establishment of treatment centres:—The County Hospital, Dorchester; the Royal Hospital, Weymouth; the Royal Victoria Hospital, Bournemouth; the Cornelia Hospital, Poole; the Yeatman Hospital, Sherborne; the Bridport Hospital; and the Blandford Cottage Hospital.

Mr. T. A. Williams, M.B., C.M. Edin., has been elected Corresponding Member of the National Academy of Medicine of Rio de Janeiro.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 25, 1916.

The Control of the Food Supply.

THERE need be no alarm at the establishment of a State control over the use, distribution, and prices of food in the country. A very general opinion, and one which we share, is now held that some such step should have been taken at the outset of hostilities, difficulties and abuses connected with the sale of food being an inseparable concomitant of war. The conservation of our food supply did not seem to possess, we must presume, the vital importance which it now has, for hitherto our rulers have shown a surprising indifference on the subject, and, let it be added, have been supported in this apathetic attitude by an uninformed public. Now there seems a chance that the steps taken may cause needless apprehension.

The President of the Board of Trade, in his speech in Parliament announcing that his department would be empowered, under Regulations additional to the Defence of the Realm Act, to control the food supply of the country, said that, far from the consumption of foods diminishing with high prices, it had increased. This means that those who are able to afford it are purchasing more food than usual, the burden of the increased expense of living falling disastrously under such action on those with small incomes. That fact justified the Government in the measures already taken in the case of sugar, and the prices of milk and of bread are now, we are glad to see, under control. No one can doubt at all that further considerable economies can be insisted upon without inflicting unendurable hardships. The physiological equilibrium can be well maintained without luxuries, and dietetic excesses are unthinkable in war time. The lesson must be learned by the community that food can be reduced to the exact requirements of the human machine, with considerable benefit to the working of that machine; the medical profession has long preached, and in the main has preached to deaf ears, the doctrine of self-control in the matter of food. The Government will now heal in spite of themselves many victims of unsuspecting gluttony; while for the moment the æsthetic side of food must, to a large extent, be neglected and the sumptuous overloading meal will disappear. The gist of the new Regulations will be found in another column; they should do much to enforce a reasonable regimen on the public. Acting in another direction, the State also takes powers to proceed against any person who wastes or unnecessarily delays

or holds up any article of food for a mercenary purpose; the pouring down the sewers of a supply of milk because the contract price did not suit the seller is the sort of regrating which is always mentioned, and if it has occurred it was the act of a criminal. Then, again, it is right that human needs should claim first attention; Mr. RUNCIMAN was able to quote cases in which whole milk had been given to pigs at a time when milk was as difficult to obtain as if there had been a genuine famine. Scandals of this description need prompt arrest, as well as all "profiteering" schemes. The price of milk is now fixed by a Milk Order of the Board of Trade. The price may not be raised above that paid on Nov. 15th, 1916, and may not exceed by more than a specified amount the price in the corresponding month before the war. A Milling Order has also fixed for the United Kingdom the percentages of flour that must be separated from wheat of various qualities, the percentages ranging from 78 to 73. This Order was almost exactly foreshadowed by Mr. RUNCIMAN last week, when it was clear that the Government proposals in regard to flour would place an embargo on the miller and require him to restrict himself to the output of a certain description of flour. The motive is, of course, economy, and the way in which this economy is to be effected without inflicting a nutritive loss on the community is to stop the supply of 70 per cent. flour. There is some confusion in many minds on the meaning of the Milling Order. The stopping the supply of 70 per cent. flour means that instead of working for a yield from the wheat in the milling process of only 70 per cent. of its weight of flour of a particularly refined character a greater yield is now called for to the extent of nearly 80 per cent. This produces the increase of nearly 10 per cent. of materials in the flour, known as "offal," which at present are rejected and find outlets in industries or in cattle-feeding. The gain to the community in this foodstuff would, according to Mr. RUNCIMAN, amount to an increased yield of flour of 8½ per cent. This is not in one way an overstated estimate, though all can see that what is gained in the bread is to some extent lost elsewhere. The public will now not obtain a loaf nearly reduced to mere starch, but one containing germ constituents, including cerealins and semolina. It is this "offal" which contains those obscure substances the vitamins, the preventives of deficiency diseases.

The policy of the Government is perfectly clear, though the details of practical administration are not yet public. Here there may be difficulties, but all the problems connected with the control of food supply are to be referred to a Controller, not yet nominated, who will have full power to act as he sees best. The Regulations so far laid down are sound, for they aim at utilising to the utmost extent whatever foodstuffs are under our hands, and at destroying the schemes of those who would trade on the nation's situation. The proposals, indeed, are temperate, we think, having regard to the urgency of the question.

Infant Mortality and the Care of the Expectant Mother.

THAT both the country as a whole and the medical profession in particular are alive to the urgent importance of preserving infant life is proved by the great activity that now prevails in Government departments, as well as in professional and private circles, in formulating schemes to promote this object. The Local Government Board has recently issued an important circular of revised regulations with respect to the payment of grants to local authorities in connexion with infant-welfare work, which includes the care of expectant and nursing mothers as well as of the infants. These proposals are of the most liberal nature, as may be judged by the fact that the Board undertakes to pay grants during each financial year in respect of the following services: the salaries and expenses of inspectors of midwives, the salaries and expenses of health visitors and nurses engaged in maternity and child-welfare work, as well as for the medical care of the mother during confinement and of the infant during illness. Throughout the counties and boroughs the medical officers of health are busy preparing plans in accordance with these generous provisions, and already the number of health visitors appointed by local authorities shows a great increase since the commencement of the war—to be precise, from 600 to 1090. Meanwhile, the National Association for the Prevention of Infant Mortality, which exercises a vigilant eye over the medical and voluntary aspects of this movement, announces the appointment of a strong and representative committee for the foundation of a great national institute of mothercraft. Nothing that is connected with the welfare of motherhood and infancy is to be outside the scope of this projected organisation. All the scattered activities, which are now independently doing good work, are to be focussed in this one national or imperial centre. The proposed aim of the institute is essentially preventive, and among the contemplated departments are to be numbered an ante-natal clinic, an infant consultation, a day nursery, a nursery school, an observation ward for wasting babies, as well as facilities for teaching and research. Here centred under one roof there are to be gathered together a series of model departments to afford ocular and practical demonstration of the manner in which work of this kind should be conducted in all its best social, domestic, and clinical aspects. The effect of such practical example should spread over the whole country and raise the standard of administrative efficiency in all that concerns mothercraft.

A series of papers, constituting a sort of symposium, were recently read at the Royal Society of Medicine before the Section of Obstetrics and Gynaecology—and we owe to the society an advance proof of these papers, which will, we presume, be published later in the Transactions. They all bear directly on the salvation of the infant, and prove that the medical profession is alive to the need for

safeguarding the interests of the expectant mother and thereby those of the now greatly valued offspring. Although much still remains to be perfected in the details of infant management, it is now well recognised that the results of good mothercraft are, if not exactly wasted, at least greatly depreciated unless there has been a corresponding safeguarding of the interests of the child's health before birth. The fallacy of the old belief that 90 per cent. of all babies are born healthy is gradually but surely being exposed by such inquiries as those which are recorded in one of the papers alluded to, an admirable essay by Dr. AMAND ROUTH on "The Importance of getting a Pregnant Woman under Medical Supervision and Affording her the Necessary Treatment"; and in another useful contribution by Dr. S. G. MOORE, medical officer of health of Huddersfield, on "The Need for Improvement in the Care of Pregnant Women and a Direct Means to that End." It does, indeed, seem paradoxical in the light of such evidence, and in that of much other work which has accumulated on the same subject during recent years, that the belief in the physical soundness of the majority of new-born babies should have gained and still retains such wide currency. The same adverse causes as compass the death of the embryo and foetus *in utero* when the degree of injury is intense, tend also to impair the general efficiency of the developing organism when the degree of injury is less severe. Although there is no practical standard by which we can estimate the degree of vitality of the new-born baby or his chances of survival, it is probable that the number of infants who are perfectly healthy at the time of birth is not large. At any rate, it is impossible to deny that there are practically none whose chance of survival could not have been improved by better management and sounder hygienic methods during the all-important period of intra-uterine life. In this connexion a paper by Lady BARRETT on "The Importance of Linking-up all Organisations for Maternity and Child-Welfare in Local Health Districts," and one by Dr. COMYNS BERKELEY on "The Maternity Centre and its Relation to the Private Medical Attendant and the Midwife," proved interesting contributions to the discussion.

In a memorandum to his committee Dr. A. K. CHALMERS, medical officer of health of Glasgow, outlines a very comprehensive scheme of child welfare suitable for a large community, such as that over which he holds medical jurisdiction. In this he insists that there is abundant evidence to prove that much of the life lost in infancy is avoidable only by the exercise of prophylactic measures directed towards ensuring the health of the mother antecedent to the birth of the child, and the new provisions contained in the recent Memorandum of the Local Government Board form a frank acknowledgment that those hitherto made have been inadequate.

UNIVERSITY OF CAMBRIDGE AND THE M.B. FOR WOMEN.—The grace for opening the First and Second M.B. examinations to women has been approved.

Annotations.

"Ne quid nimitis."

LABYRINTHINE DISTURBANCES IN MILITARY CASES OF CEREBRAL CONCUSSION AND INJURY.

A USEFUL contribution to the study of the symptoms of commotio cerebri and of intracranial injury generally has been made by Dr. François Moutier. Impressed by the frequency with which vertigo, accompanied or not by impairment of hearing and of equilibration, is complained of by soldiers with head injuries or with simple commotio, he made an examination of 46 cases, of which 28 were cases of actual cranial trauma, while the remainder belonged to the concussion group. Among the 28 only 6 were instances of frontal or occipital lesion; all the others had been wounded in the temporo-parietal region. The examination was conducted on an average some eight months after the injury. No fewer than 40 of the 46—i.e., 87 per cent.—presented symptoms of labyrinthine defect, although, as may be imagined, the other intracranial symptoms to which these were joined were of a very variable description. In only half the cases was any objective impairment of hearing remarked, though tinnitus in some form was conspicuous by its frequency, while the cases with the most definite auditory defects were also those in which vertiginous attacks were most pronounced. Titubation was a fairly common occurrence, but Romberg's test for static ataxia was positive in only seven cases. The two tests employed by Dr. Moutier were Babinski's method for galvanic vertigo and Barany's caloric test, and he mentions his unhesitating preference for the former as being more practicable and attended with more constant results. Further, Babinski's test is much less likely to occasion such general disturbance of the patient as to render difficult the investigation of the experimentally produced phenomena, which, it is well known, are transient and therefore necessitate quick and precise observation. It is performed as follows. With the electrodes placed just in front of the tragus on either side there is produced, with a galvanic current of from 3 to 5 milliampères, a rapidly increasing sensation of vertigo, with a varying nystagmus. As the current increases the head is inclined, with or without rotation, to the shoulder of the side on which is placed the anode. Should there be a labyrinthine lesion, however, the head is inclined to the side of the lesion whatever be the direction of the current, while, in addition, there is a raised threshold for the production of the vertiginous sensation, so that it, and indeed the nystagmus also, may be completely wanting. The increase of resistance to the artificial production of vertigo is not so common as the inclination of the head, which is constant. Dr. Moutier found a raised threshold in 16 of the 40 cases; in 10 of these no less a current than from 13 to 26 milliampères was necessary to produce vertigo. Some of these were cases of actual trauma, others were instances of commotio cerebri. Some, again, showed the increase of resistance bilaterally, others unilaterally; as a rule, it was present on the side of the cranial lesion. A remarkable fact was observed in three cases of occipital lesion and in none of the others of the series—viz., that the resistance was bilaterally diminished and that vertigo was produced with a current of less than 1 milliampère. As for the inclination of the

head, Dr. Moutier states that he has found experimentally that its threshold is some 3 to 6 milliampères above that for the determination of vertigo in the normal individual; in his pathological cases the difference is much greater, varying from 8 to 18 milliampères. Two only of the 40 showed no head inclination; they were both cases of parietal lesion, and in them vertigo was readily produced. In 13 of the 18 cases of commotio the inclination was always to one and the same side; in the majority of the traumatic cases the inclination was to the side of the lesion whatever the direction of the galvanic current. The three occipital cases and seven others gave a movement of the head in an antero-posterior direction, unaltered by a change in the passage of the current. Dr. Moutier draws particular attention to a transient mental obnubilation, a sort of artificially produced mental confusion, which is apt to appear after the vertigo and previous to the head deviation. It is sometimes intense, coinciding with severe vertigo, and sometimes increasing to an actual loss of consciousness. The interesting point is that not a few of his patients declared the "shock" thus produced to be identical with the shock which they experienced at the moment of being wounded; whence Dr. Moutier conjectures that in every case of commotio cerebri it is probable a labyrinthine element participates. As for Barany's tests, these were performed in 14 cases, in only two of which was any characteristic result obtained in its entirety. Speaking generally, the obnubilation was so intense and persistent that it tended to obscure the other phenomena. One of the practical deductions drawn by the author from these investigations, which were published in full in the *Revue Neurologique* for July last, is the value of the tests in establishing the sincerity of patients whose subjective symptoms might otherwise be regarded somewhat sceptically by the physician.

DREAMS.

THE subject of dreams and their causation has claimed attention from the earliest times, probably from the dawning of man's consciousness. Exact knowledge on the subject is in the nature of things difficult to obtain, and most of the facts on which rival theories are based are themselves occasions of dispute. Dr. Robert Armstrong-Jones, in a recent address to the Abernethian Society, reported a number of interesting facts, both ancient and modern. He considers that on analysis 60 per cent. of dreams will be found to relate to sight, 5 per cent. to the sense of hearing, and only 3 per cent. and 1.5 per cent. respectively have reference to taste and smell. The two latter being the more primitive and organised of the senses, frequently attach themselves in dreams to sight and hearing, the objects to which taste and smell relate being visualised or heard. After briefly setting out how the mind normally works in a waking state, Dr. Armstrong-Jones defined his conception of the working of a dream as follows:—

These three factors—viz., cognition, feeling, and will—are the invariable accompaniments of every mental process, whether an object is presented from without, or its picture is experienced from within. The same analogy applies to presentations and representations referring to the organic sensations. In dreams these factors tend to become dissociated; the will remains in abeyance, whilst the cognitive elements may be represented alone, or grouped with others which are similar or dissimilar; the feelings may also be represented to the mind and may either be painful or pleasurable. It is the will which refuses to act, and it is questionable whether a dream, once initiated, can ever be

modified by the will, although some persons state that they are able to modify a dream, and that they have frequently done so.

In discussing the interpretation of dreams by the psycho-analytic method, the lecturer, in evident warning to some of his colleagues in psychiatry, deprecated the reading of one ruling thought into their causation; due place must be given to other instincts which are as primary and original as sex and of which fear, anger, and hunger are the commonest examples. He alluded to the want of purposeful character in dreams and to the practical advantage which results from this to the dreamer:—

In the waking state we are always adapting ourselves to our needs, but in sleep we have ceased to select and choose. The mind in its relaxed state brings together memory associations which were formerly packed away in the "storehouse of the unconscious mind," the reason fills up the gaps, and a confused impression results which is the material of dreams. As is well known, the brain cortex is restored and refreshed only during sleep, and it is a comfort to know that we dream most about events to which no attention has been paid; were it not so, our sleep would be distracted and preoccupied by events that are of importance and which have been our concern during the day, so that our waking life would be prolonged as a permanent dream into the sleeping life and the necessary rest and nutrition of the brain would be impossible.

The address was heard with interest and profit by the audience.

ACUTE HEART-BLOCK THE FIRST SIGN OF RHEUMATIC FEVER.

ACUTE heart-block during the course of rheumatic fever has been described by several writers, but its detection before the appearance of other signs of the disease has not been chronicled. In the *American Journal of the Medical Sciences* for October Dr. Paul D. White, however, reports the case of a youth who came to the Massachusetts General Hospital on Dec. 16th, 1915, because he "ached all over." Four days previously he had "caught cold," and since then he had had coryza, cough, headache, and backache. For a couple of days he had been troubled by palpitation and for one day he had noticed lameness in the right arm, but he complained of no definite joint pain. He appeared ill, but examination revealed only redness of the throat (tonsils not large or inflamed), pronounced reduplication of the cardiac second sound, heard best at the apex, and irregularity of the pulse. The temperature and urine were normal. The joints appeared normal. The seriousness of the youth's condition was not appreciated until the graphic record of the pulse was obtained. A polygram of radial and jugular pulses showed very defective auriculo-ventricular conduction, with marked prolongation of the *a-c* interval (up to 0.5 second), frequently leading up to dropped beats. In the venous tracing the *a.* and *v.* waves occurred together, producing very high excursions. Right or left vagal pressure increased readily the degree of block. After establishment of this diagnosis of heart-block, apparently of infectious origin, the patient was put to bed, where he remained for two weeks, suffering from a severe attack of acute polyarticular rheumatism. The joint symptoms began a few hours after admission, and in four days the knees, toes, and right hand were swollen red, painful, and tender. Treatment consisted of the administration of salicylates by the mouth and of oil of gaultheria applied to the affected joints. On Dec. 20th a polygram showed no longer any dropped beats, but still a definite prolongation of the *a-c* interval. On Jan. 11th, 1916, the patient again came to hospital, and an

electro-cardiogram showed normal rhythm with a *P-R* interval slightly long (0.20 second). He felt well, except for slight pain in the left heel. No enlargement of the heart was made out, and there were no murmurs. The reduplication of the second sound had disappeared. The joints appeared normal. On Jan. 29th, 45 days after the block was first discovered, an electro-cardiogram showed normal rhythm with a perfectly normal *P-R* interval. It is noteworthy that the myocardium not only gave the first evidence of the importance of the illness, but also showed at least temporary damage, while no evidence was found of endocardial or pericardial involvement. Three cases of transient heart-block in rheumatic fever have been described by Sir James Mackenzie, and some by other writers, with no evidence of valvular damage.

THE EDITH CAVELL HOMES OF REST FOR NURSES.

WE recently drew attention to an appeal signed by Lady Haig and others on behalf of these homes which are intended as a memorial to Edith Cavell. That appeal was virtually put forward in the name of the Army. Lady Jellicoe has now issued a corresponding one on behalf of the Navy, pointing out the untiring energy with which nurses have worked during the war and the real need for rest and recreation if they are to continue their strenuous work. We are sure that the public, as well as our sailors and soldiers, will show their gratitude for the self-sacrificing work of our nurses by generous subscriptions. Homes of rest to enable nurses to carry on their work more effectively are needed now, but in all probability the need will be as great, if not greater, when the aftermath of sickness and suffering produced by the war has to be dealt with. Subscriptions may be sent to the offices of the Fund, 25, Victoria-street, Westminster, S.W.

THE RELATIVE VALUE OF ANTI-TUBERCULOSIS MEASURES.

IN a Memorandum prepared for the Scottish Association of Insurance Committees the medical officer of health of Aberdeen, Dr. Matthew Hay, enumerates the measures employed to date for dealing with tuberculosis in that city. The list is instructive and begins with a report prepared by the medical officer of health in 1899, but on which no administrative action was taken, except that the houses of tuberculous patients were disinfected after removal or death and medical men were supplied with a card for distribution to consumptive patients entitled "Instructions for Preventing Spread of Consumption." A wing for consumptives, accommodating about 12 patients, was added to the Newhills Convalescent Home in 1902, but it was not until February, 1911, that wards and shelters at the City Hospital provided treatment for about 70 cases. Voluntary notification of all forms of tuberculosis commenced in the same year. A tuberculosis medical officer was appointed in 1913 and a tuberculosis care committee in the following year. These and a number of other provisions now complete a scheme of which the most recent act was the vote in October last of an annual sum of £100 from the "Common Good" towards the provision of additional room in needy tuberculous households. In the face of all this activity Dr. Hay, however, assures the association that although tuberculosis is the only disease at present being dealt with under

the Sanatorium Benefit Section of the Insurance Act, it is, in his opinion, more likely to recede before general hygienic measures than from any attempt to deal with it directly. The enormous fall in the mortality from tuberculosis in the last 50 years, in Aberdeen a fall to little more than one-third of its former level, has not, it appears, been due to the discovery of more effective remedies. At any rate, Dr. Hay says that after study of the published results of practically every remedy put forward with any show of authority, and after some actual trial in tuberculosis wards of what appeared to be the best of these, he concludes that none, not even tuberculin, is of any real value in the vast majority of cases. He thinks it doubtful if a specific remedy for tuberculosis will be found, or if medico-chemical science will devise a chemical remedy of the type recently created for the treatment of syphilis; he is prepared to fall back, as the best of all means of treatment, upon the breathing of pure air, good and plentiful food, a congenial and not too sedentary occupation, temperate habits, and freedom from serious worry. In other words, the medical profession must seek to make every home and every workshop a sanatorium, not merely in respect of its construction and ventilation, but also, so far as possible, with regard to the other matters that make for a healthy life. The great decline in the death-rate from tuberculosis in recent times is as much due to higher wages, shorter hours, and better conditions of labour as to anything else, and though the death-rate in Scotland from all causes has recently been going up, as a whole, quite apart from the deaths due directly to the war, the death-rate from tuberculosis has not ceased to decline. It is perhaps to be expected of a health officer that he should lay special stress on the value of public health measures, but it is noteworthy that the health officer of a city which has done as much as Aberdeen has to elaborate special arrangements for the treatment of tuberculosis should give prominence to the part played by higher wages and better housing.

EUGÈNE LOUIS DOYEN.

THE death of Dr. Doyen last Tuesday, at the early age of 57, removes a figure well known in surgical circles not only in Paris. Unattached to any large hospital or teaching institution, his views on the etiology and treatment of cancer attained world-wide publicity. The *Micrococcus neoformans* was first observed by him in cancerous lesions in 1886, and he believed himself to have shown it to be the *causa causans* of cancer. A paper in THE LANCET in 1906 by Dr. A. Paine and Dr. J. Morgan, contributed from the Cancer Hospital, was accepted by British observers as conclusive proof that the French discoverer was in error. But Doyen's work was honest and painstaking, although the non-fulfilment of expectations brought him into violent conflicts in civil courts and with members of his profession. It is also claimed for Doyen that he was the pioneer of the cinematograph teaching of surgical technique; certainly some of his operations were thus represented in 1898.

AT the next meeting of the West London Medico-Chirurgical Society, to be held at the West London Hospital, Hammersmith-road, W., on Dec. 1st, at 8.30 p.m., Dr. T. H. Hyslop will read a paper entitled "The Psychology of Warfare." All medical men interested in the subject are invited, whether members of the society or not.

REPORT OF THE COUNTY MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER OF LONDON FOR 1915.

(Concluded from p. 839.)

PART II.—ELEMENTARY EDUCATION.

EVER since the reorganisation of the Public Health Department in July, 1911, Dr. Hamer's review of his work in connexion with the school medical service has formed an essential part of his annual report to the County Council. The Board of Education has recently expressed the opinion that the medical inspection of school children who appear to be ailing, and the maintenance of treatment at present being undertaken, should be regarded as the first charge on the time of the staff. In communicating this opinion to the Council, the Board announced the grant of £47,177 in aid of the medical services connected with public elementary schools during 1915. The grant has been assessed at the maximum rate, representing 50 per cent. of the Council's expenditure on medical inspection and treatment. It exceeds by £9000 the grant for the previous year. As a result of the war considerable difficulties have been encountered in continuing work already undertaken, and progress has necessarily been retarded. Nevertheless, the standard previously attained has not been seriously lowered. The Council's policy has been to maintain the work of inspection generally at its former level, although economy has been found practicable in certain directions. For example, in place of the detailed examination of all entrants, the Council has sanctioned the substitution of a preliminary examination of entrants followed by a further examination of selected children. The measures already taken have resulted in economy equivalent to the time of $4\frac{1}{2}$ doctors, and the staff has been reduced accordingly. Concurrent reductions have also been effected in the nursing and clerical departments. In order to meet the shortage of staff many statistical returns have been temporarily suspended. It is satisfactory to find that the arrangements already in force under the Council's treatment scheme are still to be continued. Thus the Board's suggestions have been generally complied with.

Medical Inspection of School Children.

In spite of the formidable difficulties of war time the work of school medical inspection has been efficiently maintained. In the course of the year 308 959 children were medically examined, or about 15,000 more than in 1914. Of the number examined in 1915, nearly 110 000 were found to require treatment for one or more serious defects. The three indices of straitened home circumstances—viz., the condition of the children in respect of clothing, of nutrition, and of cleanliness—being taken into account were found to reflect an improved position in many of the homes of the poor.

Disease Incidences.

Infectious conditions among school children.—The increased incidence of scarlet fever in London during 1914 was followed by a marked falling off in prevalence during the following year. Although in 1915 there was no abnormal prevalence in the county generally, local epidemics in the north-east and south-west of London were responsible for a number of school outbreaks which made serious demands on the services of the doctors. Inspection of 155 schools was made from time to time for the purpose of examining children in infected classes in quest of the sources of trouble. In consequence of the prevalence of scarlet fever and diphtheria in the Swaffield-road school at Wandsworth, all its departments were closed for disinfection during three weeks of November. This was the only occasion in the course of the year in which school closing was resorted to. The outbreak at this school appears to have been part of a general prevalence throughout the borough. Diphtheria showed no marked diminution in 1915, its somewhat marked prevalence in 1914 having been maintained through the following year. In the course of the year 51 schools were visited by school medical officers in order to examine suspected cases. Bacteriological examination was made of 1040 children, of whom 133 were found to be harbouring diphtheria bacilli, whilst in 53 other cases organisms were discovered not

definitely distinguishable from the diphtheria bacillus. Measles was exceptionally prevalent throughout the first half of 1915; the total number of attacks reported from the schools during the year was 31,313. An epidemic commencing in February spread throughout London, increasing in intensity until June, when the incidence began to decline. The number of schools under observation was 857, and of "departments" 986. Measles and German measles were made notifiable by order of the Local Government Board in November, 1915. In the course of the year *whooping-cough* was slightly more prevalent than the average. *Ringworm* has been observed in the last two years in fewer instances than usual; the proportion of cases treated by X-rays has risen from 30 to nearly 50 per cent. of the cured cases, and it is certain that the attention paid by nurses has been largely instrumental in staying the spread of infection amongst school children. *Favus* was detected in 29 fresh cases during the year, chiefly in the East End schools. Of these cases 16 were treated by X-rays. At the end of the year 22 children were known to be suffering from favus.

Adenoids and enlarged glands.—Systematic inquiries continue to be made respecting the occurrence in school children of adenoids and enlarged tonsils. Catarrhal affections of the mucous lining of the respiratory passages are rife among London school children. Accompanying these conditions is found overgrowth of the natural lymphoid masses, particularly of the tonsils and of the adenoid tissue of the nasopharynx. The almost inevitable spread to the middle ear of the unhealthy state of the throat renders the association of adenoid growth with deafness an extremely close one. The most striking accompaniments of adenoid growths are found to be, firstly, deafness and ear discharge and, finally, mental dullness and retardation of intellectual progress. The very serious interference with educational efficiency thus produced was apparent as soon as medical inspection became general. As a result of the early treatment now available the conditions referred to continue to abate.

Tuberculous affections.—Only 0.19 per cent. of the school children examined were found to be suffering from tuberculous phthisis last year, a distinct drop as compared with previous years. Other tuberculous disease was detected in 0.25 per cent. of the children examined, practically the same proportion as that formerly found. The smaller number of cases of phthisis is probably connected with the improved provision now existing for treatment in sanatoriums. It is noteworthy that a large number of phthisical children are now systematically excluded from school at the request of the tuberculosis officers of the dispensaries.

Rickets.—Among the school children medically examined last year 1.97 per cent. were found affected with rickets, compared with 1.72 per cent. in 1914 and 2.1 per cent. in 1913. This condition is usually recognised about the sixth month, and produces its main effects within the first two years of life. In the course of 1915 Dr. J. Lawson Dick examined upwards of 1000 children in East London, of whom about 800 were Jewish. In spite of the special care bestowed by their parents, the well-developed, well-clad Jewish children are not infrequently rickety. As regards food, 81.4 per cent. of these babies were breast-fed. Among 300 non-Jewish children at the Hackney Centre for Mothers 57 per cent. were breast-fed entirely, and 20 per cent. were only partially breast-fed owing to the out-door work of their mothers. As the majority of these poor women nursed their children the presence of rickets cannot be mainly due to want of mothers' milk. Of the 1000 children examined only 20 per cent. were entirely free from signs of rickets, while 72.5 per cent. of breast-fed and 87 per cent. of bottle-fed babies presented evident signs. Only one-fifth of these rickety children were manifestly ill-nourished. The social circumstances favouring rickets appear to be defective housing and overcrowding, with absence of sunlight and ventilation. If to these are added deficiency of food, especially of a nitrogenous kind, and insufficient exercise in the open air, the dangers are aggravated.

Heart diseases.—The number of children with heart defects found at routine medical inspections is tending to increase.

Re-inspection and "Following Up."

Although the activities of many voluntary helpers have been diverted by the war, the indispensable work of "following up" by re-inspection has been continued with success throughout the year. In the course of that period

78,000 children were seen at first re-inspections, while more than 4000 children due for re-inspection were found to have removed, and therefore to be untraceable. At the second re-inspections nearly 38,000 children were seen. There were discharged as cured, or as "not amenable to treatment," 48 per cent. of the children seen at first inspections, and 28 per cent. of those "accounted for" at second inspections. The tramway facilities offered by the County Council to children and parents travelling to and from school treatment centres have achieved their purpose.¹ During the ten months ending with August last more than 16,000 cheap tramway tickets were disposed of under this arrangement.

Medical and Dental Treatment.

Comparatively little progress took place last year in the arrangements for treatment of school children, the Council being of opinion that the time was inopportune for extending their schemes beyond the establishment of centres already sanctioned. During the year there was again a decline in the number of children referred for treatment for ear, nose, and throat defects. The juvenile sufferers from ringworm are evidently decreasing in number, and the provision for their treatment has accordingly been somewhat reduced. The nursing treatment of minor ailments has been particularly satisfactory, 20,419 children having been treated last year, as against 14,634 in 1914. The arrangements for dental treatment have been continued. During the year nearly 45,000 children have received dental treatment at the Council's centres, against 32,000 in 1914.

Open-air schools.—The children in the Council's open-air schools at Birley House and Shooter's Hill have been kept under medical supervision and individual records of health and progress have been preserved. The majority of the inmates are stated to have received very considerable benefit from their residence at the schools. It has been decided to close these establishments during the school holidays, for the period of the war; but arrangements have been made for the attendance of the school doctor, in order to safeguard the health and nutrition of particular children during the period of closure.

Kensal House Tuberculosis School.—This school is under the supervision of the medical officer of the Paddington Tuberculosis Dispensary, from which institution the children are drawn. The average number of children on the roll during the year was 100. There was marked variation in the attendances from month to month, the lowest being in March and the highest in November. During the year 29 children left the school and 35 were referred for further treatment. Careful physical measurements, which showed encouraging results, were kept during the period of residence in the school.

Personal hygiene.—The duties of the school nurses were specified in the medical officer's report for 1914. They include the inspection of the school children, and the treatment of those who are found verminous in head or body, or who are suffering from scabies. In order to induce systematic periodical examination the nurses visit the schools according to a rota. Last year the number of examinations approached 2½ millions, of which 1½ millions were found clean. Of the total examined 20.8 per cent. were reported verminous. There are 24 stations for the cleansing of verminous children. Of the children there dealt with more than 28,000 were found verminous to such an extent as to call for special action. Of these, 13,000 were treated at the cleansing stations and nearly 15,000 were cleansed by the parents. The arrangements for the treatment of children suffering from scabies were continued. The total number bathed during the year was 1,059, the average number of baths required for a "cure" being 6. There is little doubt that owing to war conditions scabies is on the increase, for which reason the scheme of co-operation existing between the general hospitals and the cleansing stations may be expected to prove valuable.

¹ See THE LANCET, April 22nd, 1916, p. 879.

A PRIZE of £50 and the medal of the Institute, for an essay on Maternity and Child Welfare offered by the Royal Sanitary Institute have been awarded to Miss I. Macdonald, secretary of the Royal British Nurses Association, and Miss K. C. Atherton, writing a joint essay under the motto "Isis." 137 essays were submitted.

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

COMMITTEE FOR THE INVESTIGATION OF ATMOSPHERIC POLLUTION: SUMMARY OF REPORTS FOR THE MONTHS ENDING
June 30th, 1916. July 31st, 1916.

| Place. | Rainfall in millimetres. | Metric tons of deposit per square kilometre. | | | | | | | | | | Place. | Rainfall in millimetres. | Metric tons of deposit per square kilometre. | | | | | | | | | |
|------------------------------|--------------------------|--|-----------------------------|-------|-------------------|------|---------------|---------------------------------|----------------|-----------------------------|------------------------------|--------|--------------------------|--|------|-------------------|-----------------|---------------------------------|---------------|-----------------------------|-----------------------------|--|--|
| | | Insoluble matter. | | | Soluble matter. | | Total solids. | Included in soluble matter. | | | | | | Insoluble matter. | | | Soluble matter. | | Total solids. | Included in soluble matter. | | | |
| | | Tar. | Carbonaceous other than tar | Ash. | Loss on ignition. | Ash. | | Sulphate as (SO ₃). | Chlorine (Cl). | Ammonia (NH ₃). | Tar. | | | Carbonaceous other than tar | Ash. | Loss on ignition. | Ash. | Sulphate as (SO ₃). | | Chlorine (Cl). | Ammonia (NH ₃). | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| ENGLAND. | | | | | | | | | | | | | | | | | | | | | | | |
| Exeter | 37 | 0.01 | 1.66 | 4.49 | 1.09 | 3.52 | 10.77 | 1.36 | 0.22 | 0.05 | Exeter | 27 | 0.01 | 0.92 | 2.87 | 0.39 | 1.81 | 6.00 | 0.64 | 0.13 | 0.02 | | |
| Leicester | 39 | 0.13 | 2.91 | 4.81 | 1.08 | 2.54 | 11.46 | 1.27 | 0.36 | 0.14 | Leicester... .. | 33 | 0.09 | 2.31 | 4.47 | 0.67 | 2.03 | 9.57 | 0.97 | 0.23 | 0.11 | | |
| London— | | | | | | | | | | | | | | | | | | | | | | | |
| Meteorological Office | 37 | 0.05 | 1.60 | 2.77 | 1.04 | 2.24 | 7.60 | 1.12 | 0.53 | 0.03 | Meteorological Office | 34 | 0.05 | 1.74 | 5.75 | 1.39 | 2.77 | 11.70 | 1.14 | 0.36 | 0.17 | | |
| Embankment | | | | | | | | | | | Embankment | | | | | | | | | | | | |
| Gardens | 42 | 0.32 | 8.44 | 11.67 | 2.95 | 4.60 | 27.97 | 2.41 | 0.57 | 0.15 | Gardens | 26 | 0.11 | 4.11 | 6.57 | 1.87 | 3.64 | 16.31 | 2.08 | 0.27 | 0.15 | | |
| Finsbury Park | 62 | 0.08 | 2.34 | 6.82 | 2.06 | 3.97 | 15.27 | 1.54 | 0.41 | 0.04 | Finsbury Park | 39 | 0.05 | 1.35 | 3.91 | 0.19 | 2.28 | 7.77 | 0.89 | 0.18 | — | | |
| Ravenscourt Park | 52 | 0.17 | 1.18 | 3.34 | 1.40 | 4.02 | 10.10 | 1.87 | 0.22 | 0.15 | Ravenscourt Park | 41 | 0.04 | 1.90 | 5.36 | 0.83 | 3.46 | 11.58 | 1.40 | 0.06 | 0.10 | | |
| Southwark Park | 39 | 0.05 | 3.07 | 7.95 | 0.94 | 5.16 | 15.15 | 1.29 | 0.33 | 0.09 | Southwark Park | 33 | 0.07 | 2.59 | 7.20 | 0.93 | 3.52 | 14.31 | 1.57 | 0.24 | 0.06 | | |
| Wandsworth Com. | 39 | 0.06 | 1.17 | 4.43 | 1.13 | 2.62 | 9.40 | 1.31 | 0.23 | 0.06 | Wandsworth Com. | 31 | — | 1.44 | 5.93 | 1.04 | 3.92 | 12.34 | 1.57 | 0.23 | 0.03 | | |
| Victoria Park | 42 | — | 2.10 | 7.61 | 1.63 | 3.87 | 15.22 | 2.13 | 0.38 | 0.13 | Victoria Park | 39 | 0.01 | 1.69 | 4.96 | 2.05 | 3.42 | 12.12 | 2.00 | 0.40 | 0.14 | | |
| Golden Lane | 56 | 0.12 | 2.98 | 4.67 | 2.47 | 4.04 | 14.27 | 2.35 | 0.74 | 0.31 | Golden Lane | 47 | 0.06 | 1.89 | 2.35 | 1.33 | 2.85 | 8.47 | 1.44 | 0.44 | 0.14 | | |
| Malvern | 42 | — | 0.18 | 0.46 | 0.46 | 1.10 | 2.20 | 0.56 | 1.39 | 0.02 | Malvern | 42 | — | 0.18 | 0.25 | 0.38 | 0.62 | 1.43 | 0.38 | 0.05 | 0.01 | | |
| Manchester— | | | | | | | | | | | | | | | | | | | | | | | |
| Queen's Park | 67 | — | — | — | — | — | 19.80 | — | — | — | Queen's Park | 52 | — | — | — | — | — | 13.30 | — | — | — | | |
| School of Technology | 61 | — | — | — | — | — | 22.30 | — | — | — | School of Technology | 44 | — | — | — | — | — | 24.10 | — | — | — | | |
| Newcastle-on-Tyne | 50 | 0.49 | 4.97 | 13.26 | 1.50 | 5.81 | 26.04 | 2.50 | 0.34 | 0.06 | Newcastle-on-Tyne* | — | — | — | — | — | — | — | — | — | — | | |
| York | 42 | 0.05 | 0.66 | 1.28 | 1.33 | 2.99 | 6.31 | 1.25 | 0.29 | 0.04 | York | 42 | 0.14 | 1.55 | 3.95 | 1.58 | 3.23 | 10.46 | 1.31 | 0.27 | 0.04 | | |
| SCOTLAND. | | | | | | | | | | | | | | | | | | | | | | | |
| Coatbridge | 87 | 0.10 | 1.81 | 5.81 | 1.60 | 4.20 | 13.52 | 1.71 | 0.20 | 0.15 | Coatbridge | 88 | 0.11 | 1.69 | 5.42 | 1.06 | 4.03 | 12.31 | 1.38 | 0.18 | 0.13 | | |
| Greenock | 46 | 0.11 | 3.21 | 6.68 | 1.39 | 3.51 | 14.90 | 1.50 | 0.13 | 0.11 | Greenock | 44 | 0.19 | 2.73 | 5.04 | 1.15 | 2.62 | 11.75 | 1.18 | 0.09 | 0.08 | | |

* Results lost through accident.

"Tar" includes all matter insoluble in water but soluble in CS₂. "Carbonaceous" includes all combustible matter insoluble in water and in CS₂. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (a) Approx. 91b. per acre; (b) 2.56 English tons per sq. mile; (c) one gramme per sq. metre; (d) 1/1000 millimetre of rainfall.

The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved remains the same as published in previous tables.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

ANNUAL MEETING OF FELLOWS AND MEMBERS.

THE annual meeting of Fellows and Members of the College was summoned for Thursday, Nov. 16th, at 3 o'clock, but at that time the number of Fellows and Members required to form a quorum was not present. Sir WILLIAM WATSON CHEYNE, the President, waited until a quarter past the hour before stating from the chair that as less than 30 persons were present he was compelled by the regulations governing the annual meeting to declare that the meeting would not be held. He added that if the Fellows and Members present were willing he would present the annual report and would comment on some of the items contained in it. There was complaint from some of those present that the President had not waited longer before calling the meeting off, and it was stated that the rule had not been insisted on at previous meetings, but the President, in reply, said that at no previous meeting had the quorum failed. He then proceeded to discuss the annual report. He mentioned that with regard to the vexed question of the representation of the Members on the Council of the College, the Council had received a letter from a provincial Member which expressed so clearly the objections to the proposed alteration that the Council had thought it well to publish the letter in the annual report. The attention of the Council, he said, had been drawn by the Lords Commissioners of the Admiralty to the abuse of medical certificates, and the Council had stated that they would draw the attention of their Fellows and Members to the need for great care in this respect. During the year the President and the Vice-Presidents had met officials of the Local Government Board to confer on the subject of the special fees to Poor-law medical officers, and as a result of these conferences it had been decided to introduce several alterations and amendments in the General Order of the Board relating to the matter. Sir Frederic Eve had acted as the representative of the College on a committee appointed by the Home Secretary to consider under what conditions licences to drive motor cabs, omnibuses, and tramway cars

should be granted to men suffering from some partial physical disability. He (the President) mentioned that the Council had assisted the Local Government Board in drawing up regulations on the organisation of medical measures against venereal disease. Some steps had been taken to lighten the curriculum required for dental students, and though these changes had not yet come into force they would probably do so shortly. In reference to the lectures and demonstrations in the Museum, the President mentioned that a large number of demonstrations had been given by the Conservator, and that the attendance at these demonstrations had been very good, the average being over a hundred. The Council had been asked to appoint an advisory committee in association with the Royal College of Physicians of London to assist the Central Medical War Committee, and much good work had been done by this committee. With reference to the finance of the College the war, as was natural, had had an influence upon it, and especially had there been a great decrease in the fees received for the Fellowship examinations; but the expenditure had also been reduced, so that the final result was satisfactory. The President stated that it was hoped to arrange for some memorial at the conclusion of the war to the Fellows and Members who had died on naval or military service. He then stated that though no resolution could be moved, he was quite willing that there should be some informal conversation.

Lieutenant-Colonel JOSIAH OLDFIELD pointed out that the letter contained in the report denying that Members desired to have the franchise was anonymous, and therefore not of the slightest value. The Council and the Members differed entirely in their conception of the functions of the College; the Council seemed to assert that the College existed solely for the advancement of the science of surgery, yet the report which the Council had issued contained clear evidence that matters connected with the well-being of the Fellows and Members were also considered. The Fellows on the Council were not in a position to speak with authority on such a subject as the special fees of Poor-law medical officers, and yet the President and the Vice-Presidents had conferred with the Local Government Board on this matter.

Dr. GEORGE JONES said that the Council appeared to agree with the statement in the valueless letter from the

anonymous Member that trustees could hand over a trust to other people; this showed an absolute lack of knowledge of the duties and powers of trustees.

Dr. SIDNEY C. LAWRENCE asked the President to allow the meeting to proceed, as the needed quorum was then present. He wanted to know when the Council intended to remove from the roll of Fellows the names of the six Hun Fellows now to be seen there. He expressed the appreciation of the Members of the services of Sir Victor Horsley in the prosecution of their claims to representation, and he spoke feelingly of the action of Sir Victor Horsley in going to Mesopotamia to help in the war.

The PRESIDENT brought the meeting to a close at the expiration of an hour.

MEDICINE AND THE LAW.

Christian Science and the Law in the State of New York.

IN the New York Court of Appeals a judgment regarding Christian Science has recently been delivered which will be of interest to the medical profession here as well as in the State of New York. The points raised depended only upon the interpretation to be placed upon certain passages in a law of the American State, but a wider interest arises out of the consideration of the proper principles of legislation for the matters involved. A man named Cole, "a Christian Science healer," was prosecuted at the instance of the New York County Medical Society upon a charge of practising medicine as defined by Section 160 of the Public Health Law of the State of New York without being duly licensed therefor. After the jury had disagreed at his first trial a second jury convicted Cole, and an appeal followed upon the questions of law raised by the judge's charge to the jury—that is to say, upon the applicability of the section of the Public Health Law to the facts proved. The facts themselves do not appear to have been disputed. Cole administered "Christian Science treatment" in return for fees, and a woman investigator deputed to obtain evidence had the treatment applied in respect of an affection of her eyes, real or fictitious. She described the process by saying Mr. Cole, after explaining the attitude of Christian Science towards disease, "placed his chair facing mine, closed his eyes, and put his hands up to his face, and we remained in perfect silence thus for about 15 or 20 minutes." The Public Health Law referred to forbids the practice of medicine by any person not registered or licensed in accordance with its provisions, and defines the practice of medicine thus:—

A person practises medicine within the meaning of this article, except as hereinafter stated, who holds himself out as being able to diagnose, treat, operate, or prescribe for any human disease, pain, injury, deformity, or physical condition, and who shall either offer or undertake, by any means or method, to diagnose, treat, operate, or prescribe for any human disease, pain, injury, deformity, or physical condition.

The exception to which this definition calls attention, so far as it affects the case at issue, is worded as follows:—

This article shall not be construed to affect the practice of the religious tenets of any church.

It will be seen at once that the definition quoted, without the exception referred to, would reasonably include the acts of the "Christian Science healer." The "practice of the religious tenets of any church" is a phrase which, however loosely worded it may be, has obvious applicability to the cult instituted by Mrs. Eddy, as well as to the "Peculiar People," and other sects of the same nature. The learned lawyer who delivered judgment in the New York Court of Appeals would, we gather, have been in favour of upholding the conviction upon the first point—the question of whether there had been "treatment" having been properly left to the jury. The judge in the court below had, however, in the opinion of the Court of Appeals, misdirected the jury by telling them that it was no defence that the defendant acted as he did from any sense of duty or "in the practice of the religious tenets of the Christian Science church." The omission to leave to the jury the question whether the defendant was in good faith practising the tenets of a church would appear to have been considered insuperable, the judgment of the court below was reversed and a new trial ordered. The result arrived at is regrettable; it possibly leaves Christian Scientists in the State of New York to carry on their silly

and dangerous practices without interference, though no such result was intended.

Inquests and Post-mortem Examination.

An inquest recently held at Southwark by Dr. F. J. Waldo afforded an instructive example of the value of thoroughness in post-mortem examination where foul play may be suspected, or in any case in which it is possible that such suspicion may arise. The inquest in question was held upon the body of a woman 50 years of age who was found by a carman lying in the roadway close to his horses and between them and the pavement after he had had a collision in the dark with a barrow. If his evidence was correct, and there is no ground for doubting this, he had not run over her, but she had been lying there before he pulled up his horses and got down from his seat. Post-mortem examination made by the house surgeon of the hospital to which the woman was taken, and in which she died next morning, disclosed fractured ribs, a blackened eye, and a broken tooth. She had said something about being stabbed when first raised from the ground; but also when in the hospital had intimated that she had been knocked down by a cart. The house surgeon, however, when making the post-mortem examination observed marks on her neck, which appeared to him to be such as might have been made by the fingers of a person's right hand, and in particular he deposed to an oval mark which he ascribed to the pressure of a thumb, making the suggestion that the deceased had been garrotted by a person who seized her in front with his right hand and struck her with the other. This strongly suggested a case of murder or manslaughter, although a constable who was stationed a few yards away had heard nothing, and there were no traces of a struggle. The inquest, however, was adjourned, and a further post-mortem examination was made by Dr. B. H. Spilsbury in the presence of the house surgeon who made the original one and of Dr. R. Larkin, metropolitan police surgeon. This put an entirely different complexion upon the matter. Dr. Spilsbury deposed at the adjourned inquest that the marks, which it had been suggested were finger-marks on the right-hand side of the neck, were post-mortem stains, there being no extravasation of blood discoverable upon section, as there would have been if pressure during life had caused them. The mark believed to be a thumb-mark had, according to Dr. Spilsbury, been made before death, but was ascribed by him to the woman having been run over. The second post-mortem examination had shown more ribs to have been broken than the first had revealed, and also that the pelvis was fractured. It was thus made clear that there was at any rate no evidence from the injuries indicating the commission of a crime, and the coroner directed the jury that evidence as to how the woman came to be run over was equally absent, with the result that an open verdict was returned, the carman who found the injured woman being specially exonerated from blame. The coroner and the pathologist are to be congratulated upon having arrived at a correct result where an error might easily have been made. If a verdict of manslaughter had been returned or of murder against a person unknown, it would have been the duty of the police to discover the associates of the woman or anyone who might have been seen with her on the evening when she was injured, and a very serious, but undeserved, charge might have been launched.

KING EDWARD'S HOSPITAL FUND FOR LONDON: STATISTICAL REPORT FOR 1915.—This report deals with the ordinary expenditure of 109 London hospitals which collectively provide 10,942 beds in daily occupation. The war has, of course, added considerably to the demand made upon the various institutions, and the number of beds occupied averaged 1176 more than in pre-war times. The in-patients numbered 157,510, and out-patients 1,333,706. Of the 157,510 in-patients, 28,645 were naval or military patients. The 1202 beds occupied by the naval and military patients were taken from those previously used by civilians, the remaining 1176 beds for war patients being provided for by an increase in the total accommodation at the hospitals. The total ordinary expenditure of the 109 hospitals during the year amounted to £1,342,127. The receipts in aid of the expenditure on naval and military patients amounted to £150,920, leaving £1,191,207 to be met out of the normal sources of hospital revenue. The report emphasises the imperative need for increased public support of the hospital funds.

Obituary.

ROBERT LAFAYETTE SWAN, F.R.C.S. IREL.,
SURGEON, STEEVENS' HOSPITAL, ORTHOPÆDIC HOSPITAL, AND SIMPSON'S
HOSPITAL, DUBLIN; EX-PRESIDENT OF THE ROYAL
COLLEGE OF SURGEONS IN IRELAND.

It was with sincere regret that we recorded last week the death on Nov. 4th of Robert Lafayette Swan, who for more than half a century had been in active work as a surgeon in Dublin.

Robert Swan was born on April 27th, 1843, at Durrrow, Queen's County, where his father, John Wright Swan, was at that time dispensary medical officer. He was educated at the Kilkenny College and Tipperary Grammar School, which then enjoyed a high reputation, and in 1859 entered the medical school of Steevens' Hospital, beginning the study of anatomy under Edward Hamilton, with whom he formed a life-long friendship. His career in the school was one of exceptional brilliance, and at the termination of the session, 1862-63, he won the Senior Cusack Medal and the Senior Surgical Clinical Prize. In June, 1863, at the age of 20, he was admitted as a Licentiate of the Royal College of Surgeons in Ireland, and on attaining the age of 21 received the Licence of King and Queen's College of Physicians.

Immediately after he had obtained his qualification from the College of Surgeons the School Committee at Steevens' Hospital "unanimously resolved that Mr. Robert L. Swan, on account of his distinguished career as a student of the hospital, be recommended to the board for the office of curator of the Museum." That this was no formal resolution, but a real testimony to the appreciation of Swan's worth, is shown by the fact that no similar resolution regarding a student is recorded in the minutes of the Committee. He relinquished the office of curator on his appointment as resident surgeon of the hospital in 1867, but was re-appointed two years later, on the completion of his resident post.

In 1868 he was elected a Fellow of the Royal College of Surgeons in Ireland. He took a house near Steevens' Hospital, and with a colleague opened class-rooms as a medical tutor. About this time he was appointed assistant surgeon to the Royal Irish Constabulary, and surgeon to the Great Southern and Western Railway Company. In 1873 he was appointed lecturer on descriptive anatomy in the Steevens' School, and there continued teaching till 1877, when he was appointed a member of the Court of Examiners in the Royal College of Surgeons.

Early in his career Swan became interested in the subject of orthopædic surgery, of which at that time Stromeyer of Erlangen, Liston of London, and Sayre of New York were the chief exponents. He recognised that facilities for special study and treatment were not available in the general hospitals of Dublin, and set himself to supply this want. With the aid of friends he opened in 1876 a small hospital in his house on Usher's Island for the exclusive treatment of orthopædic patients. As companions he associated with himself some of his contemporaries and teachers at Steevens' Hospital, and of this staff he was always himself the leading spirit. The work done was so good, and the need of it so great,

that the accommodation in the house on Usher's Island soon became quite inadequate. In 1883 the hospital was moved to larger quarters in Great Brunswick-street, and again in 1902 to its present site in Upper Merrion-street, where at present the daily average number of beds occupied is over 70. The Incorporated Orthopædic Hospital of Ireland stands to-day as a splendid monument to the life and work of its founder, Robert Swan.

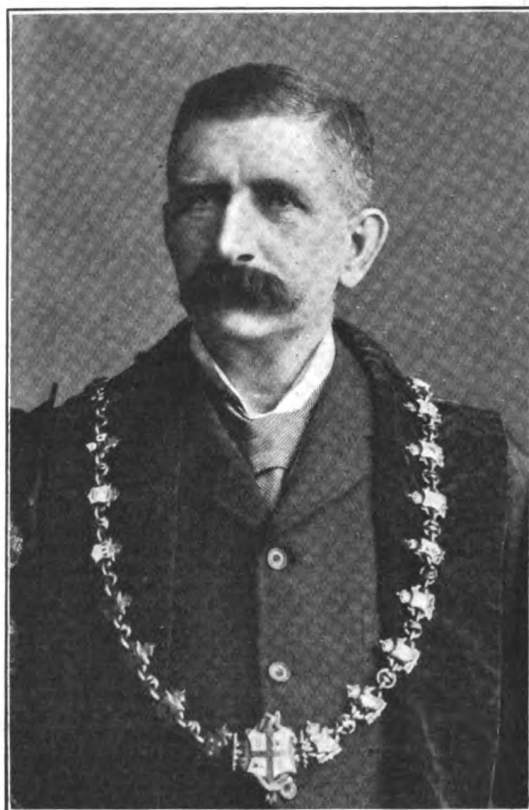
Though pre-eminently an orthopædic surgeon, Swan's activities were by no means confined to that branch of his practice. On March 25th, 1891, he was appointed visiting surgeon to Steevens' Hospital, and in 1898 and 1899 the Fellows of the Royal College of Surgeons in Ireland elected him President of their College. At Steevens' Hospital for 25 years he occupied the leading position on the surgical staff. His sound knowledge of anatomy and general pathology, combined with his great clinical experience, seemed to give him an almost intuitive power in coming to a diagnosis of surgical ailments. Though he often

appeared to rely entirely on this power, he was always ready to call to his aid all those methods of clinical investigation which have resulted from scientific research. He was a rapid and resourceful operator, and though at times his methods appeared to be rough he was well able to carry out the most delicate surgical manipulations. The excellence of the results that he obtained sometimes surprised those who did not recognise the knowledge that guided his actions. In 1894 he published a short manual on "Diseases and Deformities of the Spine," and besides this he contributed many papers to the Transactions of the Royal Academy of Medicine in Ireland, the *Dublin Journal of Medical Science*, and other periodicals. These writings, though valuable as the result of a carefully observed experience, represent but a small part of his professional work, the greater part of which is preserved as an oral tradition among his many pupils.

The personal character of Swan was striking. His most obvious characteristic was strength, both physical and mental. He was never daunted; having made up his mind on any course of action, he pursued it with determination, whether in the operating-theatre, the hunting-field, or the pursuits of daily life.

Though a delightful and interesting companion he was not a talker, his opinions when expressed being the result of thought. He seemed absolutely to ignore criticism of himself, as was well exemplified in the early history of the Orthopædic Hospital, when he was wrongly accused of working for his own advertisement and not in the cause of science; and while ignoring criticism of himself he was sparing of his criticism of others. As a friend he was always ready with assistance and with advice founded on his wide experience of men and matters. Though he never sought popularity or appeared to value it in the least, he won the respect and love of his pupils and friends by his sterling worth and invariable courteousness.

To the very last he retained his receptiveness of mind and in his later years became a great traveller. He married in 1868 the widow of Judge Teed, who predeceased him by several years. He leaves an only son, Lieutenant-Colonel John Stewart Swan, an officer in the Indian Army.



ROBERT LAFAYETTE SWAN, F.R.C.S. IREL.,
EX-PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND.

THE SERVICES.

ARMY MEDICAL SERVICE.

Lieut.-Col. John C. Connor to be temporary Colonel whilst employed as Assistant Director of Medical Services of a base.

Temp. Hon. Lieut.-Col. C. G. Watson, C.M.G., to be temporary Colonel whilst employed as Consulting Surgeon.

Temp. Hon. Capt. P. T. Crymble, having ceased to be employed with the St. John Ambulance Brigade Hospital, relinquishes his commission.

TERRITORIAL FORCE.

Capt. S. J. Fielding, East Anglian Field Ambulance, to be Deputy Assistant Director of Medical Services, East Anglian Division.

ROYAL ARMY MEDICAL CORPS.

Major G. R. Philip, C.A.M.C., to be temporary Lieutenant-Colonel.

Major A. G. P. Gipps to be temporary Lieutenant-Colonel while commanding troops on a hospital ship.

Fleet Surgeon G. E. Macleod, R.N., retired, to be temporary Major.

Captains to be temporary Majors: T. D. Archibald and T. A. Lomer.

Temporary Captains to be temporary Majors whilst commanding troops on a hospital ship: W. H. Allen, N. Duggan, J. D. Gimlette, W. J. Gow, J. H. Jones, R. H. Jones, H. R. L. Joy, G. W. Milne, C. C. Morrell, and A. E. Seller.

Temporary Lieutenants to be temporary Captains: J. W. Burns, H. Barr, W. Hamilton, J. L. Gregory, A. J. Brock, T. W. Jackson, and R. J. Gordon.

To be Temporary Captains: Capt. A. Arthur, C.A.M.C., Sir Vincent Nash, J. H. Parsons, Capt. J. Hendry (from Glasgow University Contingent, O.T.C.), and Temp. Lieut. J. A. Matson.

To be temporary Lieutenants: H. T. H. Butt, P. A. Creux, T. Gardner, F. N. Marsh, W. P. Morgan, H. Ainscow, H. C. Burbidge, V. F. Krönig-Ryan, M. F. Hession, T. St. C. Smith, J. L. Rubidge, J. C. Lee, D. K. Parkes, E. Denison, E. V. Dunkley, P. A. Hall, C. L. McDonogh, E. Lachopelle, W. J. Weaver, J. T. Bowman, R. Paterson, M. H. Cane, W. Craig, A. G. Wilkins, J. F. Adamson, Temp. Hon. Lieut. D. O. Richards, B. S. Hyslop, H. T. Howell, H. G. K. Young, T. S. Robson, E. A. Donaldson-Sim, L. C. G. Bacon, W. J. Greehy, S. W. Fisk, and J. B. Wood.

William King Carew to be temporary honorary Major whilst employed at the Dublin Castle Red Cross Hospital.

Temp. Hon. Lieut. R. J. C. Douty to be temporary honorary Captain whilst employed with No. 2 British Red Cross Hospital.

C. G. Hitchcock to be temporary honorary Lieutenant whilst serving with the British Red Cross Hospital, Netley.

The following relinquish their commissions: Temp. Major H. Lett. Temporary Captains: C. H. Denham, D. W. Woodruff, G. G. Bartholomew, E. H. Lawson, and A. C. D. Firth (on account of ill-health). Temporary Lieutenants: E. H. Alton, C. W. Sharp, and H. C. Wimble (on account of ill-health).

SPECIAL RESERVE OF OFFICERS.

Captains to be Temporary Majors whilst commanding troops on a Hospital Ship: R. M. Beath and H. C. Sinderson.

To be Lieutenants: J. W. Hyatt, H. D. Gardner, E. B. Hickson, R. T. Lewis, O. Williams, C. Y. Roberts, J. R. Banks, P. R. Riggall, C. V. Braimbridge (from University of London Contingent, O.T.C.), C. E. Hopwood (from Manchester University Contingent, O.T.C.), W. Agar (from Birmingham University Contingent, O.T.C.), N. B. B. Fleming (from St. Andrews University Contingent, O.T.C.), J. E. Bannen, J. Beveridge, A. La B. Clark, R. Cunningham, J. MacA. Mackintosh, J. Stirling. From Glasgow University Contingent, O.T.C.: H. D. Brown, W. M. Cameron, J. Crerar, W. Donald, G. M. Hetherington, A. R. Hill, T. J. Honeyman, J. N. Jamieson, S. Johnstone, H. E. McColl, D. B. Robertson, J. Steel, H. W. Torrance, and R. N. Walker.

TERRITORIAL FORCE.

East Anglian Field Ambulance: Capt. S. J. Fielding is seconded whilst holding the appointment of Deputy Assistant Director of Medical Services.

East Lancashire Field Ambulance: Lieut. R. J. Chapman to be Captain.

London Sanitary Company: Lieut. J. Chalmers to be Captain.

Highland Casualty Clearing Station: Lieut. W. Alexander to be Captain.

Welsh Field Ambulance: Lieut. J. T. Samuel to be Captain.

Attached to Units other than Medical Units.—Capt. H. Drummond, from T.F. Reserve, to be Captain. Lieut. W. Taylor to be Captain.

TERRITORIAL FORCE RESERVE.

Major J. R. Reid, from Attached to Units other than Medical Units, to be Major.

Capt. S. L. Brimblecombe, from Wessex Field Ambulance, to be Captain.

INDIAN MEDICAL SERVICE.

The King has approved the promotion of the following:—Majors to be Lieutenant-Colonels: J. M. Woolley, J. H. Hugo, D.S.O., W. H. Kenrick, R. H. Price, and R. Bryson.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census 7208 births and 4308 deaths were registered during the week ended Saturday, Nov. 18th. The annual rate of mortality in these towns, which had been 12.9, 12.6, and 13.3 per 1000 in the three preceding weeks, fell in the week under notice to 13.0 per 1000 of their aggregate civil population estimated at 17,312,295 persons for the year 1915. During the first seven weeks of the current quarter the mean annual death-rate in these towns averaged 12.6 per 1000, and was equal to that recorded in London. Among the several towns the death-rate last week ranged from 3.4 in Enfield, 5.8 in Ilford and in Smethwick, 6.4 in Oxford and in Northampton, and 7.4 in Bath and in Wallasey, to 18.6 in Great Yarmouth, 19.5 in Blackpool, 20.0 in Sunderland, 20.9 in South Shields, and 23.3 in Gateshead.

The 4308 deaths from all causes were 107 below the number in the previous week, and included 241 which were referred to the principal epidemic diseases, against 229 and 250 in the two preceding weeks. Of these 241 deaths, 112 resulted from infantile diarrhoeal diseases, 56 from diphtheria, 40 from measles, 12 from whooping-cough, 11 from enteric fever, and 10 from scarlet fever, but not one from small-pox. The annual death-rate from these diseases was equal to 0.7, against 0.8 per 1000 in the preceding week. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had declined from 477 to 127 in the nine preceding weeks, further fell to 112, and included 30 in London, 8 in Birmingham, 7 in Liverpool, and 5 each in Sheffield and Leeds. The deaths referred to diphtheria, which had been 53, 39, and 60 in the three preceding weeks, fell to 56; 13 deaths were recorded in London, 4 each in Stoke-on-Trent and Cardiff, and 3 each in St. Helens and Middlesbrough. The fatal cases of measles, which had been 13, 22, and 26 in the three preceding weeks, further rose to 40, of which 9 occurred in London, 4 each in Coventry and Liverpool, and 3 each in East Ham, Birmingham, Birkenhead, and Manchester. The deaths attributed to whooping-cough, which had been 13, 20, and 17 in the three preceding weeks, fell to 12, and included 3 in Birmingham, and 2 each in Hastings and Great Yarmouth. The deaths referred to enteric fever, which had been 11, 5, and 11 in the three preceding weeks, were again 11 last week, and included 2 each in London and Burnley. The fatal cases of scarlet fever, which had been 5, 12, and 9 in the three preceding weeks, numbered 10, of which 3 were registered in London.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had increased from 1067 to 1171 in the four preceding weeks, were 1170 on Saturday last; 131 new cases were admitted during the week, against 197, 146, and 157 in the three preceding weeks. The cases of diphtheria numbered 1556, against numbers increasing from 1262 to 1541 in the nine preceding weeks; 193 new cases were admitted during the week, against 231, 186, and 202 in the three preceding weeks. These hospitals also contained on Saturday last 69 cases of measles, 39 of enteric fever, and 35 of whooping-cough, but not one of small-pox. The 1154 deaths from all causes in London were 29 in excess of the number in the previous week, and corresponded to an annual rate of 14.0 per 1000. The deaths referred to diseases of the respiratory system, which had increased from 132 to 201 in the four preceding weeks, further rose to 236 in the week under notice.

Of the 4308 deaths from all causes in the 96 towns, 162 resulted from violence, 359 were the subject of coroners' inquests, and 1284 occurred in public institutions. The causes of 39, or 0.9 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Sheffield, Leeds, Bristol, West Ham, Bradford, and in 76 other smaller towns. Of the 39 uncertified causes, 15 were registered in Liverpool, 6 in Birmingham, 3 in South Shields, and 2 each in Dudley, St. Helens, and Darlington.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year 942 births and 657 deaths were registered during the week ended Saturday, Nov. 11th. The annual rate of mortality in these towns, which had been 13.0, 12.9, and 13.9 per 1000 in the three preceding weeks, rose to 14.5 per 1000 in the week under notice. During the first six weeks of the current quarter the mean annual death-rate in these towns averaged 13.8, against a corresponding rate of 12.6 per 1000 in the large English towns. Among the several towns the death-rate during the week ranged from 6.9 in Clydebank, 9.3 in Ayr, and 10.0 in Perth, to 20.0 in Hamilton, 20.1 in Greenock, and 21.0 in Kilmarnock.

The 657 deaths from all causes were 24 above the number in the previous week, and included 38 which were referred to the principal epidemic diseases, against 53 and 51 in the two preceding weeks. Of these 38 deaths, 13 resulted from infantile diarrhoeal diseases, 8 from measles, 6 from scarlet fever, 5 each from diphtheria and whooping-cough, and 1 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 0.8 per 1000, and coincided with that recorded in the large English towns. The deaths of infants (under 2 years), which had declined from 66 to 18 in the five preceding weeks, further fell to 13, of which 8 occurred in Glasgow and 3 in Aberdeen. The deaths referred to measles, which had been 2, 18, and 11 in the three preceding weeks, fell to 8, and included 6 in Dundee. The 6 fatal cases of scarlet fever were slightly in excess of the average in the earlier weeks of the quarter, and included 4 in Glasgow. The deaths attributed to diphtheria, which had been 12, 4, and 10 in the three preceding weeks, fell to 5, of which 2 were registered in Edinburgh. The 5 deaths referred to whooping-cough were 2 in excess of the average in the earlier weeks of the quarter, and included 2 in Glasgow. The fatal case of enteric fever occurred in Glasgow.

The deaths referred to diseases of the respiratory system, which had been 74, 87, and 95 in the three preceding weeks, further rose to 107 in the week under notice, but were 59 below the number registered in the corresponding week of last year. The deaths from violence numbered 37, against 30 and 25 in the two preceding weeks.

In the 16 largest Scotch towns 948 births and 634 deaths were registered during the week ended Saturday, Nov. 18th. The annual rate of mortality, which had been 12.9, 13.9, and 14.5 per 1000 in the three preceding weeks, fell to 13.9 per 1000 in the week under notice. During the first seven weeks of the current quarter the mean annual death-rate in these towns averaged 13.8, against a corresponding rate of 12.6 per 1000 in the large English towns. Among the several towns the death-rate last week ranged from 9.2 in Falkirk, 10.9 in Ayr, and 11.5 in Paisley, to 18.8 in Greenock, 19.4 in Dundee, and 19.5 in Coatbridge.

The 634 deaths from all causes were 23 below the number in the previous week, and included 47 which were referred to the principal epidemic diseases, against numbers declining from 92 to 38 in the six preceding weeks. Of these 47 deaths, 18 resulted from infantile diarrhoeal diseases, 9 from measles, 8 from diphtheria, 5 each from enteric fever and whooping-cough, and 2 from scarlet fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1.0, against 0.7 per 1000 in the large English towns. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had declined from 66 to 13 in the six preceding weeks, rose to 18, and included 8 in Glasgow and 3 in Clydebank. The deaths referred to measles, which had been 18, 11, and 8 in the three preceding weeks, were 9 last week, of which 5 were registered in Dundee and 2 in Glasgow. The fatal cases of diphtheria, which had been 4, 10, and 5 in the three preceding weeks, rose to 8, and included 2 each in Edinburgh and Aberdeen. The 5 deaths from enteric fever were 2 in excess of the average in the earlier weeks of the quarter, but showed no excess in any town. The deaths attributed to whooping-cough, which had been 3, 4, and 5 in the three preceding weeks, were again 5 last week, and included 2 in Glasgow. The fatal cases of scarlet fever were recorded in Edinburgh and Greenock.

The deaths referred to diseases of the respiratory system, which had increased from 74 to 107 in the four preceding weeks, further rose to 118 in the week under notice, but were 59 below the number registered in the corresponding week of last year. The deaths from violence numbered 38, against 25 and 37 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the registration area of Dublin 173 births and 135 deaths were registered during the week ended Saturday, Nov. 18th. The annual rate of mortality, which had been 18.7, 15.9, and 21.3 per 1000 in the three preceding weeks, fell to 17.7 in the week under notice, against corresponding rates of 14.0 and 13.6 per 1000 in London and Glasgow respectively.

The 135 deaths at all ages included 23 of infants under 1 year and 33 of persons aged 65 years and upwards. Three deaths (of infants under 2 years) were referred to diarrhoea and enteritis, and 1 each to enteric fever and diphtheria. The causes of 7 deaths were uncertified, and those of 6 others were the subject of coroners' inquests, while 55, or 41 per cent., of the total deaths occurred in public institutions.

During the same period 144 births and 105 deaths were registered in the city of Belfast. The deaths were equal to an annual rate of 14.0, or 0.6 per 1000 less than that in the previous week, and included 14 of infants under 1 year and 24 of persons aged 65 years and upwards. Four deaths (of infants under 2 years) were referred to diarrhoea and enteritis, and 1 each to scarlet fever and whooping-cough. The cause of 1 death was uncertified, while those of 9 others were the subject of coroners' inquests, and 27 of the total deaths occurred in public institutions.

Correspondence.

"Audi alteram partem."

THE DIFFERENTIATION OF HEART MURMURS IN SOLDIERS.

To the Editor of THE LANCET.

SIR,—The letters of Professor D. Drummond (THE LANCET, Nov. 4th) and of Dr. Kinsey-Morgan (Nov. 18th) draw attention to an interesting fact—namely, the disappearance of some cardiac murmurs under pressure. For many years this has been evident to me. The explanation of the disappearance of the murmurs with which I have satisfied myself may reveal my ignorance of the physics of sound, but I have believed that I have been right in thinking that pressure may abolish some of the vibrations producing the lower tones of sound, while the vibrations of higher-pitched tones withstand the pressure.

It used to be customary for some physicians of the older school to express the opinion that the binaural stethoscope produces sounds which are not in existence, and that the only stethoscope to be relied upon is the old wooden one. The explanation of this opinion appears to me to be that it is virtually impossible not to apply pressure when using the wooden stethoscope, and that consequently murmurs which disappear under pressure are abolished. Because the murmurs could not be heard through the wooden stethoscope, those who only used this stethoscope thought that the murmurs did not exist. By the exertion of pressure it is particularly easy to cause the added sound of the heart, sometimes called the "third sound"—i.e., the middle of the sounds which form part of the "bruit de galop"—to disappear. I used to take cardiographic tracings in cases where this sound was present. When the added sound is well marked its position is indicated by a very distinct wave on the cardiographic tracing, but in order that the wave should appear there must be very slight pressure of the recording button upon the impulse of the heart. The presystolic murmur often appears to be a medley of sounds, some of which may be very closely allied to a "bruit de galop" in character, and the medley of sounds, as Professor Drummond notes, may be altered by pressure.

On one point I feel that I must dissent from Dr. Kinsey-Morgan—i.e., from the opinion that exocardial murmurs are abolished by pressure. There is a short, harsh exocardial murmur not uncommonly heard which is apparently—but not in reality—increased by pressure. The murmur is apparently intensified, because some of the lower tones of the normal sounds of the heart are abolished by the pressure, and the harsh murmur, relieved from competition with some other tones, appears to be louder. The production of some functional murmurs seems to be obscure. Like Professor Drummond, I believe them to be endocardial. They also seem to me to be almost invariably lower pitched than organic murmurs, and consequently more easily abolished by pressure. Occasionally, however, as I have proved by looking up cases two or three years after they were first seen, a murmur sufficiently harsh to have been thought to be organic may disappear.

I am, Sir, yours faithfully,

Norwich, Nov. 18th, 1916.

THEODORE FISHER.

THE ETHICAL STANDARDS OF PANEL PRACTICE.

To the Editor of THE LANCET.

SIR,—One must be careful in fixing ethical standards for medical practice not to identify them with any particular system which may be in vogue. Ethical standards are ingrained in the individual and are reflected by his work. It is of no use to fix them in the work and hope that they may permeate the individual. A parish doctor in a village may be a model to a hospital physician as far as ethics are concerned. The first lesson to be learned is to respect and trust one another, and what system of medical practice, even if backed up by the might of a British Parliament, will ever infuse that elementary truth into our composition? Diatribes on medical ethics were not unknown in pre-panel days, and there were many towns where the sharp competitive practices of some medical men not only lowered the practice of medicine as a whole, but completely alienated one practitioner from the other.

To say that the best qualified men do not always get the biggest panels is as inane as to say that the cleverest student does not always come out first in his examination; and one is entitled to derive what consolation one can from that reflection. Surely tact, polish, worldly wisdom, knowledge of human nature are assets quite as valuable as a large panel list. If medical men would only use their constructive talents to improve the panel system instead of clamouring for something they know nothing about, we might hope for the evolution of a medical service agreeable and useful to all. The panel system was evolved by the best brains of the profession, and if that system is to be changed let us have solid reasons for the change, and still more solid ones for suggesting another in its place.

I can imagine nothing more objectionable than a whole-time State service which binds a medical man to a certain number of patients, for some of whom he may have no sympathy, and to some of whom his advice and treatment may seem worthless and dangerous. We revert to the parish and club system again, but call it a State system. Before we laud the methods of the regimental medical officer would it not be well that they should be put in the crucible of a Royal Commission just as the Poor-law Service was. If they emerge pure and unimpeachable let us have them by all means. But no Government, I am sure, will lend its countenance to a system which has to be maintained by the public purse, which will convert the consulting-room into barracks where the sick will be paraded and the malingerers ejected, merely to raise the standard of medical ethics.

I am, Sir, yours faithfully,

Exeter, Nov. 14th, 1916.

J. A. W. PEREIRA.

GRAVES'S DISEASE AND ELECTRICAL TREATMENT.

To the Editor of THE LANCET.

SIR,—The address by Dr. Hector Mackenzie to the Royal College of Physicians of London, which appears in your issue of Nov. 11th, is peculiarly welcome to those of us whose work lies in the application of X rays and electricity in medicine. A short time ago I read a lengthy address on the subject of Graves's disease by a distinguished physician in which radiation treatment was not even mentioned.

I note that Dr. Mackenzie was not favourably impressed with the results of the X ray treatment of his own cases in former years. One notices, in examining the records, that small doses were given at intervals of seldom less than a week, and often longer. Nothing is said as to the quality of the rays; quite possibly they were soft or medium only. The treatment seems to have dragged on for six months, a year, or more. My personal experience is that the bulk of what can be done by X rays can be done in three months, often less. But to get rapid results doses must at first be given at frequent intervals—not less than three times a week, and in very acute cases daily. Hard rays filtered through 2 mm. of aluminium should be used, and it is never necessary to produce more than a slight brownish discolouration of the skin. Causes of failure are the existence of mental distress or physical pain; long and tiring journeys to receive treatment often nullify its effects. Dr. Florence Stoney rightly lays stress upon the retarding effects of constipation and dental trouble. When the disease is associated with

mental obsession or where it has originated owing to trying circumstances which are no longer operative, hypnotic treatment should be combined with that by X rays. It is unlikely to help when the surroundings remain bad.

I have lately associated cerebral galvanism with X ray treatment, with most beneficial results. It has a remarkably soothing and steadying effect on the nervous system in such cases. The positive pole is placed over the forehead and the negative on the back of the neck, and the patient holds a long bar covered with lint in both hands. Cerebral galvanism is a most valuable procedure in many nervous disorders, but it is extremely dangerous in unskilled hands.

Dr. Mackenzie remarks that X rays seem to fail in acute and severe cases. This is not always so, as the following case demonstrates.

A. C., a chief draughtsman in an important railway centre, became acutely ill after a long period of overwork. His pulse became almost uncountable, his eyes prominent, and he had violent tremor. He was soon unable to leave his bed, and continued to go downhill. A consulting physician who was called in gave him only a few days to live. His own medical attendant, believing that he could be made no worse, had him carried on a stretcher to my consulting-room. He was given small doses of hard rays daily for a fortnight, at the end of which time he was able to come in a cab, and to walk in and out with assistance. Two months later—having had in all 30 doses—he returned to his duties. His pulse was 80 and steady. There was no tremor. Exophthalmos persisted to a considerable extent, and the thyroid, which had never been much enlarged, was not visibly altered in size. This was five years ago. Two years ago, when I last heard of him, he was still at work and in good health.

Since then I have more than once taken an X ray apparatus into a private house when the patient has been acutely ill. I have seen it stated that X rays are unsuited for the acutely ill on account of the noise, but the old platinum break must have been in mind. A modern portable outfit is silent. When there is electric light in the house the difficulties are not great, but even if accumulators must be used treatment can be carried out, though the exposures will have to be of considerable length. Dr. Mackenzie puts the death-rate from Graves's disease at 25 per cent.—a terrible figure. I feel certain that the bedside application of X rays in the early stages of acute exophthalmic goitre would save many lives.

I am, Sir, yours faithfully,

Cavendish-square, W., Nov. 14th, 1916. F. HERNAMAN-JOHNSON.

ENTERIC AND TYPHOID: A POINT IN NOMENCLATURE.

To the Editor of THE LANCET.

SIR,—My attention has been called to a letter published in THE LANCET of April 15th, in which Dr. E. W. Goodall suggests that the term "enteric" should be used to cover the three infections—typhoid, paratyphoid A, paratyphoid B, and the term "typhoid" be restricted to cases of infection by the Eberth-Gaffky bacillus. While completely agreeing with Dr. Goodall, I would point out that this nomenclature was adopted by Dr. Chalmers and myself, in 1913, in the second edition of our "Manual of Tropical Medicine" (p. 1046).

I am, Sir, yours faithfully,

ALDO CASTELLANI,

Surgeon-Major, R.I.N.

Rome, Oct. 26th, 1916.

THE USE OF SUGAR.

To the Editor of THE LANCET.

SIR,—Would it not be well, now that food is so dear, if the medical profession issued an authoritative statement on the subject of dietetics, regarding which so much ignorance prevails? Take the case of sugar. A mother has recently written to a daily paper complaining that she cannot get enough sugar for her children's porridge, wholly ignorant that this food contains an abundance of carbohydrate, all of which enters the blood as sugar; and that the proper addition to it is not sugar but salt, as every wise Scot's son doth know. Neither the Government nor the public realise that sugar as such is not an essential ingredient of human food after the period of lactation. We spend 22 millions yearly on sugar. One-half of this might comfortably be saved. Had I my way I would long ere this have closed down the entire sweetstuff industry and devoted its immense resources to the manufacture of sorely needed equipment and munitions.—I am, Sir, yours faithfully,

Wimpole-street, W., Nov. 14th, 1916.

HARRY CAMPBELL.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Capt. J. D. Forrester, R.A.M.C., was educated at George Watson's College, Edinburgh, and qualified M.B., Ch.B. Edin. in 1912. He had held the appointment of senior house surgeon at Rochdale Infirmary, and joined the R.A.M.C. on the outbreak of war, receiving his captaincy in February this year.

Lieut. G. W. Guthrie, R.A.M.C., qualified M.B., Ch.B. Edin. in 1900, and was at one time obstetric house physician and house surgeon at the Middlesex Hospital. Later he practised at Tunbridge Wells, and then went to Lima, Peru, and joined the R.A.M.C. in May this year.

Surgeon C. H. Gow, R.N., was educated at Cambridge University and at St. Bartholomew's Hospital, and qualified in 1915, and thereupon took up the appointment of a temporary surgeon in the Royal Navy.

Died.

Lieut.-Col. C. S. Rundle, I.M.S. (retired). (See Obituary of the War in next column.)

Major C. H. Benham, R.A.M.C., was educated at Queen Elizabeth's School, Ipswich, and at London University, and was a student at University College Hospital, London, qualifying in 1897. Prior to the war he was in practice at Brighton, and held several appointments in the district and in the county, and had been attached to the R.A.M.C. (T.F.) for some years. He was on his way home invalided from Salonica, and died at Malta.

Lieut.-Col. H. K. Bean, Australian Army Medical Corps, qualified at Edinburgh University in 1881, and was in practice at Mossley, Lancs. for a few years. He afterwards went out to Australia, where he practised at Wallsend, New South Wales, and served with the N.S.W. contingent in the South African War. On the outbreak of the present war he went with the Australian Forces to Egypt, and was invalided to England. Later he went to France on special duty, and subsequently returned to Egypt, where he died.

Capt. A. Groenwald, M.C., South African Medical Corps.

Wounded.

Lieut. G. C. Linder, R.A.M.C., attached Royal Field Artillery.
Capt. J. T. Heffernan, R.A.M.C., attached Duke of Cornwall's Light Infantry.

Capt. J. Sainsbury, R.A.M.C.

Capt. H. St. A. Agate, R.A.M.C., attached S. Wales Borderers.

Surgeon F. B. Eykyn, R.N.

Lieut. G. Arthur, R.A.M.C., attached Bedford Regiment.

Capt. H. E. P. Yorke, R.A.M.C., attached East Yorks Regt.

Previously reported Prisoner in German hands, now reported Released.

Capt. H. Kay, South African Medical Corps.

Previously reported believed taken Prisoners at Kut-el-Amara, now reported Prisoners of War.

Lieut. N. S. Jatar, I.M.S.

Lieut. R. V. Martin, I.M.S.

Capt. K. K. Mujesji, I.M.S.

Lieut. N. R. R. Ubhaya, I.M.S.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Lieut. F. H. Stewart Caiger, 92nd Battery Royal Field Artillery, only son of Dr. F. F. Caiger, of the South-Western Fever Hospital, Stockwell, London. Lieut. Caiger was in his second year at Caius College, Cambridge, when he joined, and had already commenced his medical studies.

Second Lieut. W. M. Clarke, Royal Engineers, younger son of Professor J. Michell Clarke, of Clifton, Bristol.

Second Lieut. K. B. Stuart, Durham Light Infantry, only son of Dr. R. Stuart, of Durham.

Second Lieut. K. P. L. Williams, Welsh Regiment, only son of Dr. W. L. O. Williams, of Llanrug, near Carnarvon.

Major C. H. Benham, R.A.M.C., son of Dr. H. J. Benham, of Olton, Vaud, Switzerland.

Lieut. H. C. D. Buchanan, Middlesex Regiment, son of Dr. L. Buchanan, of Arvagh, co. Cavan, Ireland.

Capt. L. O. Habershon, East Yorkshire Regiment, youngest son of the late Dr. S. H. Habershon, of Harley-street.

Second Lieut. T. B. Woods, Royal Field Artillery, eldest son of Sir R. H. Woods, late President of the Royal College of Surgeons, Ireland.

Second Lieut. R. H. Boys, Bedfordshire Regiment, youngest son of Dr. A. H. Boys, of St. Albans, Herts.

OBITUARY OF THE WAR.

ALFRED THOMAS LOGAN, M.B., CH.B. GLASG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain A. T. Logan, who was killed on active service on Sept. 16th (and at first reported "Missing"), was 28 years of age and second son of Thomas Logan, of Strathbungo, Glasgow. He was educated at Glasgow University, where he gained a Dr. Gibson bursary, and was resident at the Western Infirmary and the Eastern Hospital before graduating with distinction in surgery in April, 1915. Obtaining a commission at once in the Royal Army Medical Corps, he trained at Eastbourne and went out three months later attached to the Grenadier Guards, and saw much heavy fighting during his 14 months of service, for which he was mentioned in despatches.

Captain Logan's wish was to become a medical missionary, and it was in this mould that his energies were cast. At Glasgow he was President of the Christian Endeavour Society and of the Young Men's Guild, and was active in the social work of the Lodging House Mission. His early death cuts short a life of promise.



WILLIAM HENRY EDMUNDS, L.M.S.S.A. LOND.,

SURGEON, ROYAL NAVY.

Surgeon W. H. Edmunds, who died at the Western Infirmary, Glasgow, on Oct. 4th, at the age of 27, was the only son of J. L. Edmunds, of Chepstow, Mon. He was educated at West Monmouth School, Pontypool, and University College, Cardiff, where he passed the Second M.B. Examination, and then entered St. Mary's Hospital with an open University Exhibition. He qualified in 1913, was for a time assistant to Dr. T. E. Mitchell at Old Hill, Staffs., and was then appointed medical superintendent of the Birmingham City Hospital at West Heath. This appointment he resigned to join the Navy as a temporary Surgeon at the end of 1915. After some experience at naval bases he became medical transport officer to a naval ambulance train, and contracted while performing his duties there blood poisoning, from which an operation failed to save him.

Surgeon Edmunds was a keen athlete. At Cardiff University he won his cap at water polo and football, and will be remembered as a fine Rugby football player. Generous in mind and brave in body, his personal qualities made him popular with his fellow students, while his chief writes of him as a loyal colleague and pleasant companion, well up on the scientific side of his profession. Surgeon Edmunds was recently married.



CUBITT SINDALL RUNDLE, M.B., C.M. EDIN.,

LIEUTENANT-COLONEL (RETIRED), I.M.S.

Lieutenant-Colonel C. S. Rundle died at Jersey on Nov. 11th. The deceased was a member of the Indian Medical Service, and on his retirement some ten years ago

took up, with his family, his residence in Jersey. Upon the outbreak of the war he at once offered his services to the War Office, and received eventually the appointment of medical officer in charge of the local prisoners of war camp. He continued in the active performance of the duties of that position until his death, which occurred with painful suddenness from a heart affection. Lieutenant-Colonel Rundle, who was 62 years of age, was for some time the honorary secretary of the Jersey Choral Society, being himself a musician of considerable ability. He was a highly respected and esteemed resident in the island, and his death has called forth numerous expressions of sincere regret. He leaves a widow, a son, and a daughter to mourn their loss. One son, an officer in the Army, was killed at Gallipoli about a year ago. Among the many floral tributes laid upon the coffin was a beautiful wreath sent by the German prisoners of war.

THE HONOURS LIST.

The name of the following officer, who is engaged in the war in a combatant capacity, was omitted from the list published in THE LANCET last week:—

Distinguished Service Order.

Major (temp. Lieut.-Col.) Lewis Leslie Clayton Reynolds, Oxford and Bucks Light Infantry.

For conspicuous gallantry in action. He handled his battalion with great skill and determination. On two separate occasions his good leading has achieved important success.

MENTIONED IN DESPATCHES.

In a despatch received from Lieutenant-General Sir Percy Lake, K.C.B., dealing with the operations in Mesopotamia subsequent to April 30th, 1916, and dated August 27th, 1916, the following references to the Medical Services appear:—

In my previous despatch I alluded to the difficulties against which the Medical Services have had to contend.

Much thought and hard work have been devoted to overcoming these difficulties and meeting the medical needs of the force. The advance made in this direction is clearly shown by the fact that the total accommodation for sick and wounded in Mesopotamia, which on Jan. 21st (exclusive of Kut) was 4700 beds, and by May 13th had risen to 9425, amounted on July 1st to 15,745, with 2700 more in process of organisation.

The advent of the hot weather early in May, with a sudden rise in the temperature, increased the number of sick rapidly. The intense heat was aggravated at the front by the total absence of shade and by the failure of the "shamal" or north wind, which, usually due about the middle of June, did not commence to blow till July 19th. The admissions to hospital then at once lessened, and are still decreasing. The majority of the cases are not serious.

An outbreak of cholera occurred at the Tigris front at the end of April, but was got under control in the course of a short time, since when only a small number of isolated cases are reported from time to time from various parts of the country.

I am much indebted to Surgeon-General F. H. Treherne for the valuable assistance he has consistently rendered since his arrival in the country; also to Colonel W. H. Wilcox, consulting physician, whose high professional knowledge has always been at the service of the force. Much credit is due to the nursing sisters, who have carried out their duties with great devotion, and have shown untiring zeal and energy in alleviating the sufferings of those who have passed through their hands.

By the untimely death of Colonel Sir V. Horsley both the force and the medical profession sustained a severe loss.

A large amount of hutting for hospitals and troops has been erected, providing accommodation for 8700 sick and 15,000 troops; water-supplies for the troops have been installed at Basrah and Amarah, and many important miscellaneous works have been carried out.

The thanks of the whole force in Mesopotamia are especially due to the Order of St. John of Jerusalem, the British Red Cross Society, including its Indian branch, and the Young Men's Christian Association.

The two former, through their representative, Lieutenant-Colonel J. Gould, have devoted their resources to supplementing the medical appliances and comforts provided by the State for the care of the sick and wounded. All officers and men who have passed through the hospitals at any time would desire to express their gratitude to these societies.

The names of Brevet-Colonel M. H. Fell, R.A.M.C., and Lieutenant-Colonel S. P. James, I.M.S., are brought to notice in this despatch.

THE INSURANCE OF DISCHARGED SOLDIERS AND SAILORS.

A discharged soldier who has been insured in the Army, subject to certain conditions and provided he remains insured after his discharge, is entitled to medical benefit, sanatorium benefit, maternity benefit, and sickness and disablement benefit. The present conditions of recruiting have filled the ranks of our regiments with men of varying social status, some of whom were insured under the National Insurance Acts before they became soldiers, while others were not. Some of the former class have con-

tinued their insurance, while serving, whereas others have not, and some of the latter class have become insured. Some also have long been members of Approved Societies, while others have never joined one. The conditions under which benefits can be obtained therefore necessarily vary, and the Insurance Commissioners have issued a leaflet (29 A) to explain for the benefit of discharged soldiers (including men transferred to the Army Reserve or the Territorial Force Reserve) the steps necessary to be taken in order to obtain the advantages to which they are entitled. Leaflet 29 A will be found useful, not only by soldiers, but by those who from time to time may be asked by discharged soldiers in ill health to assist or advise them.

As disclosed by a recent question in the House of Commons, there seems to be a misapprehension with regard to the attitude of insurance companies towards returned and injured soldiers and sailors who go back to civil employment. As the result of inquiries the War Pensions Statutory Committee are able to state that the companies have been, and are, insuring such men without any addition to the ordinary rate of premium for the trade. The companies are determined to put no obstacle in the way of these men receiving the fullest care and attention on their return.

ARMY SANITATION.

In his lecture at University College, London, last week Lieutenant-Colonel H. R. Kenwood, professor of hygiene in the University of London, paid a very high tribute to the sanitary sections of the Royal Army Medical Corps, which have, he said, earned the name of "handy men in khaki" for their skilful improvisations. Using as their raw material by-products of other departments of the Army in the form of meat, biscuit, or petrol tins, they have obtained results as satisfactory as those obtained by the use of costly apparatus. Professor Kenwood incidentally commended the consideration of this fact to local rural authorities in England where hygiene is at a very low ebb—mainly, no doubt, on account of the supposed expense of efficient public health appliances. Many hygienic problems in the field have already been solved, and Professor Kenwood called attention to two which still awaited solution: (1) the separation of soap fats from the sullage waters of baths and washhouses to avoid clogging of the whole drainage system, and (2) the ridding of the trenches of the pest of rats and mice. Rats had been accredited with conveying trichiniasis and round worms and were suspected of conveying the virus of trench fever in which recent work suggested an intracorporeal blood infection. The whole question of underground hygiene in view of the growing importance of subterranean shelter in warfare might demand special consideration in the future.

Some interesting practical information bearing upon the sanitary administration of a base camp was given in a paper recently read before the Section of Epidemiology and State Medicine of the Royal Society of Medicine by Captain C. G. Moor, 1st London Sanitary Company. Of the 25 men forming a sanitary section three or four, Captain Moor says, should be sanitary inspectors, five or six of the others should be men with trade experience, such as that of plumbing or carpentry, and the others may be men of good education. The chief point, he adds, is that they should be adaptable, keen, possess a general knowledge of field sanitation, and be able to carry out a practical campaign against flies, know how to build furnaces, be capable of burning camp rubbish and faeces and horse manure, construct grease-traps, &c., and pick out and remedy on the spot all minor sanitary defects in a camp. Practical details as to carrying out this work given, and the paper was generally full of hints and simple directions which experience in the camp has taught are valuable.

THE FRIENDS AMBULANCE UNIT.

This valuable unit was started early in September, 1914, within a few weeks of the outbreak of the war, and long before conscription was generally anticipated. The movement came from a number of young men who were debarred by their Quaker convictions from taking up arms, yet were eager to help their fellows in remedial work; and their desire was that that work should be as near the firing line as possible, in order that they might share to the full the dangers and hardships of the soldiers. It is voluntary, and the men provide their authorised uniform, the unit finding food and lodging only. The first party of 40 men and six

ambulance cars landed at Dunkirk, in Flanders, on Oct. 31st, 1914. Within a few days of landing they dressed the wounds of 3000 soldiers and assisted the transport and shipment of 6000.

The numbers in the ambulance unit at the present time are 876, of whom 494 are in France and Belgium. Seventy-one are on the sea in hospital ships; 311 are at hospital and ambulance work in England. The unit has had several motor convoys working at the Front in Flanders and France. The total mileage run by the unit's cars since the beginning of the war up to October, 1916, is 697,250 miles, and during this time they have transported 94,407 patients. In the hospitals organised and staffed by the unit in Flanders and France 5561 patients have been treated. The unit has provided staffs for four ambulance trains in France and two hospital ships, one of these being now in the Near East. In the relief of the civil population of Belgium the unit has received 1100 children, has cared for 192 children in special orphanages, has distributed 250,000 bottles of milk, has disinfected and distributed 1,000,000 gallons of water, has distributed 80,000 garments, has given 275,385 anti-typhoid injections, and has visited 9354 houses in search for evidences of infections. A great deal of work has been carried on in places constantly exposed to German fire. For example, the hospital of *Sacré Cœur* at Ypres was not given up until it had been shelled. Many expressions of appreciation have been received from responsible English, Belgian, and French authorities, as well as from officers and men who have been attended to by the unit.

Besides the ambulance and hospital work, the unit has latterly been authorised to place men referred to it in the proper way by tribunals or military authorities in other approved work of national importance, and a considerable number of men have been so brought under the discipline and supervision of the unit. It may be added that every man in the unit is there with the sanction and approval of the proper authorities and in accordance with the law of the land.

THE LOSS OF THE "BRITANNIC."

The loss is announced by the Admiralty of the British hospital ship *Britannic*, which was sunk by mine or torpedo on Tuesday morning last, Nov. 21st, in the *Egean* Sea. The official statement estimates a loss of 50 lives, while of 1106 survivors 28 are injured. There is believed to have been upwards of 1000 sick and wounded on board.

The *Britannic*, which was taken over as a hospital ship on completion, was actually launched from the Belfast yard of Messrs. Harland and Wolf in February, 1914, but had never been completed as a liner. She was the largest British ship, being 47,500 gross tonnage. She was proceeding from Salonica at the time of the disaster, which occurred off the island of *Zea*, and the small toll of lives is accounted for by the fact that her 35 boats were successfully lowered. The loss of the vessel, however, is a serious one; she was admirably equipped, and had already done much splendid service in the Mediterranean.

MEDICAL ENTOMOLOGY IN THE WAR.—Students of medical entomology are making a serious contribution to the hygiene of the army, especially in the eastern areas. Lieutenant-Colonel Andrew Balfour's address on the Entomology of Salonica to the Salonica Medical Society has been reprinted, and is being distributed to the members of the society and the medical officers proceeding to Salonica. Colonel Balfour based his competence to speak on the subject partly on the fact that he had himself been bitten by mosquitoes, ceratopogons, Simuliæ, Stomoxidæ, Phlebotomus, Lepidoselagh, and other insects. He laid stress once more on the fact that in human excrement we have the chief source of flies, 500 of which can breed out of a single deposit, and he commended the efficacy of large simple fly-traps placed outside cookhouses and messes. He regarded all the three chief Grecian species of mosquito—*Anopheles maculipennis*, *A. superpictus*, and *A. bifurcatus*—as capable of carrying malarial infection. He had not yet met with the flea in Salonica, but this parasitic immunity did not, unfortunately, extend to the louse, to which, as he reminds medical officers, a moist temperature of 55°C. has been shown to be lethal. He concluded by a commendation of the scarab as a diligent, ingenious, and useful scavenger.

BATH CARAVANS.—The King inspected last week two new bath caravans presented by the Wounded Allies Relief Committee to the Belgian Army for use at the front. The design is due to Mr. J. R. Anderson, a well-known civil engineer, with the aim of providing the greatest number of baths in the shortest space of time. It is reckoned that each caravan will be able to deal with some 800 men in a continuous working period of 14 hours. Each van carries 12 light steel baths, 5 ft. 3 in. long by 2 ft. 2 in. wide, nested one inside the other, and is fitted on both sides with roller-controlled waterproof sheeting for forming tents with the aid of light spars and poles. Side and end sheetings are provided with openings for access and ventilation, and complete waterproof enclosures ensuring privacy are thus formed. Each tent enclosure affords accommodation for six baths, the water for which will be heated by petrol. These novel caravans will be drawn by horses from place to place wherever water can be obtained from rivers and streams.

THE SIR JOHN ELLERMAN HOSPITAL FOR DISABLED OFFICERS.—By the generosity of Sir John Ellerman, St. John's Lodge, Regent's Park, is being converted into a hospital for the use of disabled officers who require day and night attendance. The house is situated in beautifully timbered gardens, where the patients can enjoy open-air life in complete privacy. The British Red Cross Society has formed a house committee, of which Sir Arbuthnot Lane is chairman. The honorary staff includes Sir David Ferrier, Sir Malcolm Morris, Sir StClair Thomson, Mr. Lewis Smith, Mr. A. W. Ormond, Mr. James Sherren, Mr. Walton Read, and Mr. A. D. Reid. The hospital is expected to be ready for the reception of patients at the end of December.

WAR HOSPITAL MAGAZINES.—We have received No. 11 of the *Ration*, the organ of the Reading War Hospital. Like the majority of its contemporaries, it contains much to amuse and interest both by letterpress and illustration. The contributions are entirely the work of the hospital staff, whom we congratulate on the result of the employment of their very limited spare time. The magazine can be obtained at the Reading War Hospital, price 2d.

THE STAR AND GARTER HOSPITAL.—The British Women's Hospital Fund has collected in less than a year the sum of £150,000 for the Star and Garter Hospital at Richmond.—Owing to the generous response to the appeal for funds to found a memorial in memory of the R.A.M.C. officers who died from typhus at Wittenberg Camp, a room will be built and furnished at the Star and Garter Hospital, and a suitable tablet placed on one of the walls.

NURSES FOR MILITARY DUTY IN INDIA.—With reference to the request of the military medical authorities addressed to the Indian St. John Ambulance Association for the supply of another hundred nurses for temporary military duty, owing to the shortage of medical officers now available for civil duties, it has been found extremely difficult to train nursing candidates for first-aid and home nursing certificates which are essential in the case of each applicant. An appeal to all medical men and medical women in India, whether private practitioners or in Government employ, has been distributed asking them to render their assistance in remedying the dearth of suitable candidates by conducting classes for women in both these subjects. In this connexion it may be noted that as a special war measure the Order of St. John of Jerusalem have sanctioned the holding of both first-aid and home nursing classes concurrently, and have also agreed that two lectures a week may be delivered in each of these subjects instead of only one as heretofore.

A CONCERT will be held in aid of St. Dunstan's Hostel for Blinded Sailors and Soldiers at the Queen's Hall on Tuesday next, Nov. 28th. It is hoped that Her Majesty Queen Alexandra and Their Royal Highnesses the Duke and Duchess of Connaught will attend. The artists and the full band of the Grenadier Guards are giving their services.

THE King has sanctioned the following appointments to the Order of the Hospital of St. John of Jerusalem in England:—As Knights of Grace: Colonel E. H. L. Lynden-Bell, C.B., R.A.M.C., and Colonel Sir Bertrand E. Dawson, K.C.V.O., C.B.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the Primary Fellowship Examination in Anatomy and Physiology, held on Nov. 8th, 9th, and 14th, the following candidates were successful:—

Loveday Shackell Banes, London School of Medicine for Women; Pares Chandra Datta, Calcutta, Edinburgh University and Middlesex Hospital; Robert Owens Fisher, M.B. Tor., M.R.C.S., L.R.C.P., Toronto University, Middlesex and London Hospitals; Albert William Holgate, University College; Muriel Elsie Landau, London School of Medicine for Women; John Herbert Ellis Moore, B.A. Cantab., Cambridge and Leeds Universities; Edith Mary Pensonby Morris, London School of Medicine for Women; Alfred Peine, Birmingham University; Hugh Reid, Liverpool University; Stanley Nahum Sennett, B.A. Cape University, London Hospital; and Elsie Maud Visick, London School of Medicine for Women.

UNIVERSITY OF LONDON.—At examinations held recently the following candidates were successful:—

THIRD (M.B., B.S.) EXAMINATION FOR MEDICAL DEGREES.

Honours.—Eveleen Blanche Gibson Rivington (Distinction in Medicine), London (Royal Free Hospital) School of Medicine for Women; and Graham Selby Wilson (Distinction in Medicine, Pathology, Surgery, and Midwifery and Diseases of Women), Charing Cross Hospital.

Pass.—Arthur Wilfrid Adams, University of Bristol; Augustus Rollo Balmain, University of Birmingham; Frederic Vivian Bevan-Brown, Guy's Hospital; Percival Courtenay Cole, St. Bartholomew's Hospital; Charlotte Iris Fox, London (Royal Free Hospital) School of Medicine for Women; William Bashall Gabriel, Middlesex Hospital; Frank Keith Hayman, University of Bristol; Helen Ingleby, St. George's Hospital and London (Royal Free Hospital) School of Medicine for Women; Showkram Sahjiram Malkani, University College Hospital; Francis Courtenay Mason, B.A., Middlesex Hospital; Arthur Morford, B.Sc., St. Bartholomew's Hospital; Edith Annie Shaw, London (Royal Free Hospital) School of Medicine for Women; Alfred George Simmins, Westminster and Guy's Hospitals; Eric Clarence Sparr, B.A., St. Bartholomew's Hospital; and Thomas Pearce Williams, Middlesex Hospital.

B.S. EXAMINATION (for Students who Graduated in Medicine in or before May, 1904).

Honours.—Constance Brodribb Slater, London (Royal Free Hospital) School of Medicine for Women.

The following candidates have passed in one of the two groups of subjects:—

Group I.—Charles Vincent Boland, St. Bartholomew's Hospital; Raghunath Ganesh Dani, University College Hospital; Harold Aylmer De Morgan, Middlesex Hospital; Hugh Ernest Griffiths, University College, Cardiff, and St. Bartholomew's Hospital; George Alex Sheridan Madgwick, London Hospital; and Enid Eleanor Sanger-Davies, and Elisabeth Henrietta Schwab, London (Royal Free Hospital) School of Medicine for Women.

Group II.—Robert Townly Bailey, Charing Cross Hospital; Charles Douglas Banes, King's College Hospital; Thomas Stenner Evans, University College, Cardiff, and St. Mary's Hospital; Jerusha Jacob Jhirad, London (Royal Free Hospital) School of Medicine for Women; Hugh Montagu Cameron Macaulay, B.Sc., St. Bartholomew's Hospital; Ferdinand Molina, St. Thomas's Hospital; John William Glamor Phillips, St. Mary's Hospital; Pinthu Sal, St. Thomas's Hospital; and Elsie Stansfeld, London (Royal Free Hospital) School of Medicine for Women.

The following degrees in the Faculty of Science were recently awarded by the Senate:—

HONORARY (WAR) B.Sc.

Second Lieutenant Harry Richard Jones, Edward Montague Lake, A.B., and sergeant Ernest Edwin Perrin.

A MEETING of the Section of Odontology of the Royal Society of Medicine will be held at the Society's Rooms, 1, Wimpole-street, W., on Monday next, Nov. 27th, at 8 P.M., when an address will be given by the President, Mr. W. B. Paterson, and a report made on the Paris Dental Congress of Nov. 10th to 13th by Mr. T. A. Coysh.

MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE SOCIETY.—The usual monthly committee meeting was held at the society's offices, 300, High Holborn, London, W.C., on Nov. 17th, Dr. Major Greenwood being in the chair. The reports submitted showed for the previous month a slight upward tendency in sickness claims, which was due largely to members being wounded on active service. The sickness experience proved considerably under expectation, although it is estimated that at least 1000 of the society's members are on active service in various parts of the world. Fresh proposals showed a decline on previous figures, but the advantage taken of the new endowment assurances is larger than formerly, and the total amount of such assurances should not be much less than in the previous year. It was decided to continue to accept new members who may be either actually in or about to join His Majesty's Forces in the non-combatant branches, the society's experience not appearing to justify either refusal or extra rates. Since 1914 the sum of £23,000 has been invested in various War Loans, and it is probable that, in view of the high rate of interest and security, the society will still further increase their holdings from time to time.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Pauper Lunatics.

Mr. HAYES FISHER, Parliamentary Secretary to the Local Government Board, has introduced in the House of Commons a Bill "to make provision with respect to the amounts payable and transferable in respect of pauper lunatics under Section 24 of the Local Government Act, 1888." It was read a first time. The short title is the Local Government Emergency Provisions (No. 2) Bill.

National Insurance Funds.

According to a statement made by Mr. C. ROBERTS, representing the National Insurance Commission, the amount of National Health Insurance Funds paid over to the National Debt Commissioners for investment in public stocks was at Dec. 31st, 1915, with accruing interest, £30,000,000.

Sanitary Measures in India.

The Report on Sanitary Measures in India in 1914-15 has been presented to both Houses of Parliament, and been issued as a Blue-book. It deals at considerable length with the health of the European Army of India, of the Indian Army, and of the general population, and in the jails, medical institutions, and sanitary works.

Board of Pensions Bill.

The Board of Pensions Bill was read a second time by the House of Commons on Tuesday, Nov. 21st.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 15TH.

Medical Arrangements in Gallipoli.

Mr. KEATING asked the Financial Secretary to the War Office whether, in view of the fact that Army chaplains and surgeons must have special knowledge of the conditions to which wounded and sick men were subject and as to whether there were sufficient doctors, attendants, and nurses, he would take steps to call the attention of the Dardanelles Commission to the necessity of calling men of these professions to give evidence before them.—Mr. FORSTER replied: If my honourable friend will refer to the Special Commissions (Dardanelles and Mesopotamia) Act, 1916, Section 2, Subsection (1), he will see that the Dardanelles Commission has had conferred upon it by Parliament full power to obtain the attendance of any witnesses whom it may desire to hear. I do not think there is any necessity for me to bring to the notice of the Commission the value of any particular class of evidence, but if the honourable Member desires to do so no doubt the Commission would be glad to hear from him.

Nerve-strained Soldiers.

Mr. ANDERSON asked the Financial Secretary to the War Office whether cases had been brought to his notice in which soldiers discharged from the Army because of temporary or permanent mental disturbance due to the strain of modern conditions of warfare had been placed in asylums and their parents called upon to contribute to their maintenance; whether some of these soldiers were classified as pauper lunatics; whether, in the case of a married soldier, the separation allowance stopped, leaving his wife and family to have resort to Poor-law relief; and what steps he proposed to take to place the whole question on a more satisfactory footing.—Mr. FORSTER answered: No, sir; where lunacy is caused by military service the soldier's pension is more than sufficient to meet any claim the guardians may see fit to raise for the man's maintenance and no contribution from the parents is necessary. Separation allowance is succeeded by pension in these cases.

THURSDAY, NOV. 16TH.

Housing in Dublin.

Mr. CLANCY asked the Chief Secretary to the Lord Lieutenant of Ireland whether he was yet able to make any announcement as to his intentions in the matter of financial assistance towards the solution of the housing question in Irish urban districts, and especially in Dublin.—Mr. DUKE replied: I have now received the reports on this subject from the Local Government Board, Ireland, but have not had an opportunity to consider them.

The Price of Milk.

Answering Mr. MACMASTER, Mr. RUNCIMAN (President of the Board of Trade) said: In London and in other large centres of population the retail price of milk is in general 6½d. per quart. The increase which has occurred in the retail price appears to be in the main due to the higher prices demanded by the producers, whose expenses have, in the

majority of cases, increased considerably. I have no information at present which would lead me to accept the suggestion that the rise of price is due to manipulation by a combine.

Veneral Diseases in the Army.

Mr. HOUSTON asked the Financial Secretary to the War Office (1) whether he could give the number of men suffering from enthetic (venereal) diseases in the British Army at home and abroad as shown by his latest return and the date of that return; and (2) whether he could state the number of men reported temporarily unfit for duty or service in the British Army at home and abroad by reason of enthetic (venereal) diseases as shown in his latest return and the date thereof.—Mr. FORSTER wrote in reply: The admissions to hospitals at home from the cause in question represent a ratio of 48 cases per 1000 per annum, which is slightly less than the ratio in peace time. No figures are available for the troops abroad.

Mr. HOUSTON also asked the honourable gentleman (1) whether he could state the number of men permanently invalidated and discharged out of the Army owing to enthetic (venereal) diseases, but temporarily cured of the same, during the years 1914, 1915, and 1916 up to his latest return and the date thereof; and (2) whether he could state the number of men suffering from enthetic (venereal) diseases who had been discharged uncured from the Army at home and abroad during the years 1914, 1915, and 1916, and permitted to return to their homes.—Mr. FORSTER replied: I regret that there are no statistics available. It would take much time to compile them, and I hope my honourable friend will not press me to put this additional work on a heavily strained department. I would remind the honourable Member that no men are discharged from the Army for these diseases in the infectious stages.

TUESDAY, NOV. 21ST.

The Army Reserve.

Replying to Mr. MACCALLUM SCOTT, Mr. FORSTER (Financial Secretary to the War Office) said: An Order has been issued that all group and class men who have been placed by medical boards in categories not being taken for service, and have accordingly been sent back to their homes to continue in the Army Reserve, shall be called up for medical re-examination. There has been no change in the standard of fitness for service in the Army, but the needs of the Army are not permanently fixed and limited: they change as the situation develops.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

BISWICK, W. T. BROWN, W. S., M.R.C.S., L.R.C.P. Lond., CARTER, C. N., M.R.C.S., L.R.C.P. Lond., and ROBERTS, C. Y., M.R.C.S., L.R.C.P. Lond., have been appointed Casualty Officers and Resident Anesthetists to St. Thomas's Hospital.
BOUSFIELD, G. W. J., KYNDALL, G. M., M.R.C.S., L.R.C.P. Lond., MAYROGORDATO, A., M.R.C.S., L.R.C.P. Lond., and WALL, J. M., L.M.S.S.A., Resident House Physicians to St. Thomas's Hospital.
CROMPTON, K. E., M.B., B.C. Cantab., Obstetric House Physician to St. Thomas's Hospital.
HYMAN, O. H., House Surgeon to St. Thomas's Hospital.
MARRIOTT, W., NAIRNE, N. S., M.R.C.S., L.R.C.P. Lond., SAL, P., M.R.C.S., L.R.C.P. Lond., and WHITE, J. S., M.B., B.Ch. N.U.I., Resident House Surgeons to St. Thomas's Hospital.
MCKENZIE, DAN, M.D. Glasg., F.R.C.S. E., Oto-laryngologist to the Hôpital Francals, London.
MILLS, JOHN, M.B., Resident Medical Superintendent to the District Asylum, Ballinasloe.
RIVINGTON, RYELKEN B. G., M.B., B.S. Lond., House Physician to the General Hospital, Nottingham.
THOMSON, H. H., M.D. Glasg., Medical Officer of Health for Herts.
WHEELER, W. I. DE COURCY, F.R.C.S. Irel., one of the Medical Referees under the Workmen's Compensation Act, 1906, for the County and City of Dublin.

Certifying Surgeons under the Factory and Workshop Acts: HOWELL, R. V., M.B., Ch.B. Glasg. (Clacton-on-Sea, Essex); and O'DRISCOLL, T., M.B., B.S. R.U.I. (Valentia District, co. Kerry).

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index). When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

ABERGAVENNY, MONMOUTH COUNTY ASYLUM.—Temporary Assistant Medical Officer. Salary £7 7s. per week, with board, &c.
ASTON-UNDER-LYNE DISTRICT INFIRMARY.—Assistant House Surgeon. Salary £150 per annum, with usual emoluments.
BATTERSEA BOROUGH COUNCIL.—Medical Consultant for Maternity and Child Welfare Centre, two afternoons a week. Salary £1 1s. each attendance.

BIRMINGHAM CITY, YARDLEY ROAD SANATORIUM AND TUBERCULOSIS DISPENSARY, Broad-street.—Assistant Medical Officer. Salary £300 per annum, with board, &c.
BRADFORD, ROYAL EYE AND EAR HOSPITAL.—House Surgeon (non-resident).
BRISTOL ROYAL INFIRMARY.—House Physician. Salary at rate of £120 per annum, with board, &c.
CHESTER ROYAL INFIRMARY.—House Physician. Salary £160 per annum, with board, &c.
DEVONPORT, ROYAL ALBERT HOSPITAL.—House Surgeon, unmarried. Salary £150 per annum, with board, &c.
HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas. Also Assistant Resident Medical Officer. Salary £100 per annum, with board, &c.
LEEDS TOWNSHIP INDOOR INSTITUTIONS, Beckett-street.—Assistant Medical Officer, indoor. Salary £215 per annum, with board, &c.
MAIDENHEAD UNION, Bray District.—Medical Officer and Public Vaccinator. Salary at rate of £160 per annum, &c.
METROPOLITAN HOSPITAL, Kingsland-road, N.E.—Resident Medical Officers.
NAVAL AUXILIARY HOSPITAL IN SCOTLAND.—Anesthetist and Assistant Medical Officer. Salary £1 per day, residence, &c.
NEW HOSPITAL FOR WOMEN, Euston-road.—Female Senior Clinical Assistant in Ophthalmic Department.
PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—House Physician and House Surgeon. Salary £80 per annum each, with board, &c.
QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone road, N.W.—Pathologist and Registrar. Salary at rate of £80 per annum and lunch.
RED CROSS HOSPITAL FOR SERBIANS.—Surgeon. Salary £10 10s. per week and all found.
ROTHERHAM HOSPITAL.—Junior House Surgeon. Salary £150 per annum, with board, &c.
ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, W.—Resident Surgical Officer.
SALISBURY GENERAL INFIRMARY.—House Surgeon, unmarried. Salary £150 per annum, with board, &c.
SAMARITAN FREE HOSPITAL FOR WOMEN, Marylebone-road, N.W.—Registrar.
SHEFFIELD ROYAL HOSPITAL.—Ophthalmic and Aural House Surgeon, Casualty Officer, and Assistant House Surgeon. Salaries respectively £135, £130, and £120 per annum, with board, &c.
STOCKPORT, COUNTY BOROUGH EDUCATION COMMITTEE.—School Medical Officer. Salary £30 per annum.
TOTTENHAM EDUCATION COMMITTEE.—Temporary Assistant Medical Officer.
VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST ON THE SEPARATE PRINCIPLE.—Assistant Resident Medical Officer.
VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—Dental Surgeon.
WEST RIDING OF YORKSHIRE.—Two School Medical Inspectors. Salary £325 per annum.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Tipperary.

Births, Marriages, and Deaths.

BIRTHS.

BLAKE.—On Nov. 18th, at Cambridge House, Portsmouth, the wife of Philip Blake, L.D.S. Eng., of a son (stillborn).
SMITH.—On Nov. 14th, at Ramsgate, the wife of S. Alwyn Smith, D.S.O., Major, C.A.M.C., of a son.
TAYLOR.—On Nov. 15th, at St. Leonards-on-Sea, the wife of C. R. Taylor, M.B., Captain, R.A.M.C., of a daughter.
VEVERS.—On Nov. 13th, at Brookville, The Avenue, Girvan, Ayrshire, the wife of Geoffrey Marr Vevers, M.R.C.S., L.R.C.P., Lieutenant, R.A.M.C., of a son.

MARRIAGES.

DIXON-SYKES.—On Nov. 14th, at St. Martin's Church, Epsom, Dudley Thomas Dixon, R.A.M.C. (T.), to Gladys Maule, eldest daughter of Mr. and Mrs. Walter Sykes, Church-road, Epsom.
LLOYD DAVIES-JONES.—On Nov. 15th, at St. Pancras Church, J. Lloyd Davies, M.D. Lond., M.R.C.P., to Gwen, younger daughter of the late John Jones, Registrar of the Swansea County Court, and of Mrs. Jones, Gellifahren, Llandysul.
STALLMAN GALAVAN.—On Nov. 14th, at St. Anne's Church, Upper Kennington-lane, J. F. H. Stallman, M.B., B.S., Lieutenant, R.A.M.C., to Mary, second daughter of Mrs. M. H. Galavan, of Tramore, County Waterford, Ireland.
UNWIN-ROBINSON.—On Nov. 14th, at St. Stephen's Church, Clapham Park, T. Barton Unwin, M.B., Major, R.A.M.C., to Amy Emily (Clissie), daughter of the late Thomas Henry Robinson and Mrs. Robinson, Feroft, Clapham Park, S.W.
WALSHAM-BANNISTER.—On Nov. 17th, at the Central Mission Church, Barking-road, West Ham, Hugh Walsham, M.A., M.D., F.R.C.P., to Amy Bannister.

DEATHS.

BEST.—On Nov. 11th, after a short illness, William Jenner Best, M.R.C.S., L.S.A., D.P.H., of Louth, Lincolnshire, in his 51st year.
MOSS.—On Nov. 17th, at Sutton Court, Chiswick, William Boyd Moss, F.R.C.S., in his 88th year.

IN MEMORIAM.

STONEV.—Percy Butler Stoney, Milcom, Cumberland, died Nov. 23rd, 1915, aged 67, forty years M.O.H. for Milcom U.D.C.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

ARMENIAN MEDICINE.

M. Basmadjian, an Armenian resident in France, has been making researches for a considerable time in connexion with Armenian medical manuscripts, with the object of publishing a complete dictionary of early Armenian medical terms. Finding that in the present circumstances the production of a work of this character was impossible, he has given a preliminary account of his labours to the "Société Asiatique." Notwithstanding the many Armenian treatises upon medicine long known to exist in manuscript, only one of them has been adequately edited. This is the book written by Mekhithar of Her, which M. Basmadjian styles "La Consolation dans les Fièvres." It was composed in 1184 in Cilicia; contains 46 chapters, treating of all varieties of fever, and rules for treatment. It was published, in Armenian, by the Mekhitharist Fathers, at Venice (who have a press there), from a manuscript No. 246 of the Armenian collection in the Paris Bibliothèque Nationale. A German translation of Dr. Ernst Seidel appeared at Leipzig in 1908. At their Convent of Saint Lazarus at Venice the Armenian monks have another vellum manuscript, dated 1294, which preserves a compilation from the same work of Mekhithar, but a much larger portion of it is occupied with the translation of an Arabic work into Armenian, made, the scribe says, under the reign of King Gagik. There were two monarchs of this name, both reigning early in the eleventh century. They also have another manuscript upon medicine, written under "King" Hovhannes in the same century. At Vienna the same fraternity of ecclesiastics possess a treatise copied in 1433 by a monk named Abraham for a "Doctor" Hovhannes. This manuscript, in addition to its treatise, contains a pharmacopœia.

The most celebrated Armenian medical author was Amir-Dovlat, of Amasia, who flourished in the fifteenth century. Three important works of his are known, and M. Basmadjian has succeeded in obtaining copies of them. The first, entitled "The Utility of Medicine," was composed at Philippopolis between 1466 and 1469, a general survey of medicine, and comprised in addition an essay upon anatomy. The second work is a pharmacopœia. The third, which is by far the most valuable, bears the curious title of "Useless for Ignoramuses." It was written at Constantinople between 1474 to 1478, and is a collection of simples and dictionary of medical substances, after the style of many Arabic works of similar character, especially of one by Ibn-el-Beithar. Two manuscripts of the greater portion of this book, Nos. 244 and 249 of the Armenian texts, may be consulted at the "Bibliothèque Nationale." Another Armenian medical author of fame was Bouniat of Sebaste, but he wrote in the early seventeenth century. His work was thought to be lost, but M. Basmadjian has found a copy. It is a general treatise in 50 chapters, each of these being confined to the consideration of one special malady. Another Armenian, named Açar, who hailed also from Sebaste, and flourished in the sixteenth or early seventeenth century, left his native place and evidently resided in Persia and India. A manuscript of his upon anatomy is known, dated by the scribe as 1625, but it is a later copy. M. Basmadjian possesses an older codex written at Surat in 1657 and 1658. It contains a system of pathology and anatomy, a pharmacopœia and a *materia medica*, with the equivalent Arabic and Greek medical and pharmaceutical words. Açar is said to have composed it in 1622. Another Armenian medical work as complete as that of Açar is by a certain Galoust of Amasia. This is preserved in a single copy in the library of the Armenian convent at Vienna. The most interesting manuscript for medical history is probably No. 245 of the Bibliothèque Nationale. It is by a "medical priest" named Hakob. It is a sort of lexicon giving more than 2000 names of substances and plants and those of 100 diseases. No exaggerated value should be placed upon Armenian medical literature, because the authors have derived most of their information from Arabic writers, as was the case in Europe in the later Middle Ages; but when these manuscripts are re-edited, with commentaries, another chapter in the history of medicine will have been recorded.

VITAL STATISTICS OF ST. HELENA.

Major H. E. S. Cordeaux, C.B., C.M.G., Governor and Commander-in-Chief of St. Helena, in his annual report to the Colonial Office, just issued, gives the estimated civil population of the island on Dec. 31st, 1915, as 3594, being an increase of 31, as compared with the corresponding date of 1914. This figure does not include the naval and military garrison or the crew of the cable ship, *Britannia*. The

birth-rate for the year 1915 was 24.4 per 1000 and the death-rate 14.7, as compared with 27.3 and 14.6 respectively in the previous year. The health of the island was on the whole good, but there were two epidemics of influenza, one of which, in March and April, was exceptionally severe and spread very rapidly; fortunately, there were no fatal cases owing to the fact that the complication of bronchopneumonia did not manifest itself as in previous epidemics. There were no cases of enteric or dysentery, but there were several new cases of both early and late tuberculosis. The latter disease appears to be on the increase, and a sanatorium for the isolation of tuberculous patients is sadly needed. Infant mortality was very high, due partly to malnutrition and partly to delay in seeking medical advice in cases of infantile diarrhoea, vomiting, and convulsions. There were 189 admissions to the Civil Hospital during the year and 11 deaths. A new operating theatre has been built. The mean temperature of the colony in 1915 was 61.9° and the total rainfall 41.590 inches.

GOOD MILK.

The public owe a debt of gratitude to the Central Committee for National Patriotic Organisations for the pamphlets which they have published under cost price on subjects of national importance at the present time, such as the rearing of poultry, the family laundry, and the preservation of fruit and vegetables. Their latest publication is the "Little Cow and Milk Book," by the Hon. Mrs. Lionel Guest, which is full of information useful to dairy-farmers and the public in general. A novel suggestion in the book and one that deserves careful consideration is that of starting a crèche for cows in order that young stock may be reared to maturity. The high mortality among calves is said to be one of the causes of high-priced milk. The pamphlet can be obtained at 62, Charing Cross, price 2½d.

CERTIFIED OCCUPATIONS.

In the latest list of certified occupations, dated Nov. 20th, 1916, there are a few items affecting more or less directly the medical man or medicine in general. The chemist (analytical, consulting, or research) is still to be treated as in a certified occupation if recommended by the Royal Society. The head attendant of a chemical laboratory, but only if married, is reserved at 25 years of age. Men lawfully and habitually engaged for dispensing medicines are to be treated as in a certified occupation if agreed to be indispensable for the needs of the population, after consultation with the Insurance Committee for the area. The attendants on lunatics are to be similarly treated if recommended by the Board of Control.

THE SAVING OF CHILD AND INFANT LIFE.

OWING to the increasing interest shown by the public in this national question the governing body of the Battersea Polytechnic, Battersea Park-road, S.W., have decided to open the hygienic department for public inspection to-day (Saturday, Nov. 25th) from 3 to 6 P.M. The lecture-rooms and laboratories, together with an exhibition of apparatus and models used for teaching purposes, will be on view. The head of the department will be pleased to explain the aim and work of the department. No tickets of admission are required.

M. L. J. is recommended to consult his medical adviser. We do not suggest treatment, either through books or otherwise.

Enquirer.—The statement in the daily press that 1651 new cases of tuberculosis were notified during the third quarter of the current year in South Shields county borough was obviously incorrect. We learn on inquiry that 110 was the actual figure. The total number of cases on the register in that borough is steadily rising, the increase being attributed by the medical officer of health to earlier notification rather than to an increase in the incidence of tuberculosis. In Woolwich, however, a definite rise in the death-rate from tuberculosis was noted in the 1915 report, and the same is the case for Walsall. The question whether war conditions are responsible in this country for an increase in tuberculosis is one deserving attention.

"War Worker."—A leading article in our issue of July 8th alluded to the fate of the practices of members of the medical profession who had accepted commissions in the Royal Army Medical Corps, and stated that this fate had not yet received the amount of practical attention which it deserved. In THE LANCET of July 22nd several schemes under consideration by the Central Medical War Committee were outlined and the general principles indicated which should hold in any particular case. A scheme formulated by Dr. T. Campbell, of Wigan, was given at length, as this met with a good deal of support in Lancashire. A more definite stage has now been reached, as the Central Medical War Committee has agreed on a series of recommendations, which appeared, and were commented on, in our issue of Nov. 11th.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W. MEETINGS OF SECTIONS.

Monday, Nov. 27th.

ODONTOLOGY (Hon. Secretaries—F. M. Smyth, F. N. Doubleday, J. Howard Mummery): at 8 P.M.

Presidential Inaugural Address by Mr. W. B. Paterson, F.R.C.S.

Report on the Inter-Ally Dental Congress, Paris, November, 1916, by Mr. T. A. Coysah, L.D.S. Eng.

Paper:

On "Ulcerative Peri Odontitis of Fusio-Spirillary Origin" by Dr. Frank Taylor and Captain W. H. McKintistry, R.A.M.C.

Dr. John Byre has kindly promised to open the ensuing Discussion.

Tuesday, Nov. 28th.

MEDICINE (Hon. Secretaries—Charles R. Box, W. Cecil Bosanquet): at 5.30 P.M.

Papers:

Dr. H. Batty Shaw and Dr. Woo: Six Cases of (Esophagectasia).

Dr. F. Parkes Weber: Acquired Syphilis of the Lungs.

Friday, Dec. 1st.

LARYNGOLOGY (Hon. Secretaries—Cecil I. Graham, Frank A. Rose): at 4 P.M.

Cases and Specimens will be shown.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith-road, W.

FRIDAY.—8.30 P.M., Meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Course of Lectures on the Anatomy of the Human Body, for First-aid and Ambulance Students:

MONDAY.—5 P.M., Lecture XII.—Prof. A. Keith: The Skin and Mucous Membranes. The More Common Accidents to which they are Exposed.

Anatomical Preparations and Specimens used for illustration will be on exhibition in the Theatre from 3 P.M. to 5 P.M. on each lecture day, and between 10 A.M. and 5 P.M. in the Hall of the Museum on the following day.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynaecological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics.—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. E. Whipham); Gynaecological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics: Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting). 3.30 P.M., Special Demonstration:—Dr. G. G. Macdonald: Clinico-pathological Methods in the Diagnosis of Disease.

WEDNESDAY.—Clinics.—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynaecological Operations (Dr. A. E. Giles). Clinics: Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics: Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

LONDON HOSPITAL, Mile End-road, E.

THURSDAY.—11 A.M., Dr. J. H. Sequeira: Early Diagnosis and Treatment of Syphilis. (Lecture II.) In connexion with this lecture Dr. J. McIntosh will give a Practical Demonstration of the Examination for Spirochetes and Wassermann Test.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—6 P.M., Dr. W. K. Sibley: Scabies and its Treatment.

THURSDAY.—6 P.M., Chesterfield Lecture:—Dr. M. Dockrell: Acne, real and "so-called."

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

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It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

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METEOROLOGICAL READINGS.

(Taken daily at 5.30 a.m. by Steward's Instruments.)

THE LANCET OFFICE, Nov. 22nd, 1916.

| Date. | Rain fall. | Solar Radio to Vacuum. | Max. Temp. Shade. | Min. Temp. | Wet Bulb. | Dry Bulb. | Remarks. |
|---------|------------|------------------------|-------------------|------------|-----------|-----------|----------|
| Nov. 16 | ... | 62 | 42 | 39 | 37 | 39 | Cloudy |
| " 17 | ... | 69 | 40 | 34 | 32 | 35 | Cloudy |
| " 18 | ... | 43 | 43 | 35 | 31 | 38 | Overcast |
| " 19 | 0.50 | 43 | 43 | 35 | 39 | 39 | Raining |
| " 21 | 0.79 | 55 | 47 | 37 | 42 | 43 | Raining |
| " 20 | 0.01 | 57 | 48 | 39 | 42 | 43 | Misty |
| " 22 | ... | 65 | 49 | 35 | 37 | 38 | Overcast |

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

The following journals, magazines, &c., have been received:—Medical Review of Reviews, Clinical Medicine, Bulletin of the Office International d'Hygiène Publique, Archives de Médecine et de Pharmacie Militaires, Canadian Practitioner, Military Surgeon, Review of Neurology and Psychiatry, Canadian Medical Association Journal, Canadian Journal of Medicine and Surgery, British Journal of Dental Science, American Medicine, Cleveland Medical Journal, Journal of the Missouri State Medical Association, American Journal of Medical Sciences, British Dental Journal, Rhodesia Agricultural Journal, Pediatrics, South African Medical Record, Public Health, Surgery, Gynecology and Obstetrics, Medical Times.

BOOKS, ETC., RECEIVED.

- BAILLIÈRE, TINDALL, AND COX, London.
Surgical Anatomy. By J. A. C. Macewen, B.Sc., M.B., C.M. Second edition. Price 10s. 6d. net.
- CASSELL AND CO., London.
Clinical Methods. By E. Hutchison, M.D., F.R.C.P., and Harry Rainy, M.D., F.R.C.P. Edin., F.R.S.E. Price 10s. 6d. net.
- CHAPMAN AND HALL, London.
Hope of the Future: Management of Children in Health and Disease. By Dr. Mary Scharlieb. Price 6s. net.
- CHURCHILL, J. AND A., London.
Healthy Marriage. By G. T. Wrench, M.D., B.S. Lond. Price 3s. 6d. net.
- CONSTABLE AND CO., London.
Text-book of Elementary Chemistry. By F. Mollwo Perkin, Ph.D., F.I.C., F.O.S., and Eleanor M. Jagers. Price 3s. net.
- CORNISH BROS., 39, New-street, Birmingham.
The Panel Doctor: His Duties and Responsibilities. By T. M. Tibbetta, M.D. Lond., Member of the Staffordshire Insurance and Panel Committees. Price 1s. 6d. net.
- PROWSE, HENRY, AND HODDER AND STROUGHTON, London.
Military Surgery. By Dunlop Pearch Penhallow, S.B., M.D. Harv. With Introduction by Sir Alfred Keogh, K.C.B., Director-General, A.M.S. Price 15s. net.
- GREEN, W., AND SON, Edinburgh.
The Basic Anatomical Nomenclature: An Alphabetical List of Terms

showing the Old Terminology, the B.N.A. Terminology, and the Suggested English Equivalent. By M. B. Jamieson, M.D., M.B., Ch.B. Edin. Price 6s. net.

- LEWIS, H. K., London.
Biology of Tumours. By C. Mansell Mullin, M.A., M.D. Oxon. F.R.C.S., Lieutenant-Colonel, R.A.M.C. Price 2s. 6d. net.
- Chart of the Natural Progression and Coordination in School Subjects from the Child's Point of View. Price 1s. 6d. net.
- LIPPINCOTT CO., J. B., Philadelphia.
Care and Feeding of Infants and Children. By Walter Reeve Ramsey, M.D. Price 9s. net.
- Catarrhal and Suppurative Diseases of the Accessory Sinuses of the Nose. By Ross Hall Skillern, M.D. Price 21s. net.
- MACMILLAN, MESSRS., AND CO., London.
Collected Papers on Circulation and Respiration. Second series: Clinical and Experimental. By (the late) Sir Lauder Brunton, Bart., F.R.S., &c. Price 5s. net.
- SAUNDERS, W. B. COMPANY, London.
Diseases of the Eye. By G. E. de Schweinitz, M.D., Prof. of Ophthalmology in the University of Pennsylvania. New eighth edition, enlarged and reset. Price 25s. net.
- Surgery of the Spinal Cord. By Chas. A. Elsberg, M.D., Prof. of Clinical Surgery, New York University. Price 21s. net.
- WRIGHT, JOHN, AND SONS, Bristol.
Diseases of the Throat, Nose, and Ear. By W. G. Porter, M.B., B.Sc., F.R.C.S. Ed. Second edition. Revised by P. McBride, M.D. Edin., F.R.C.P. Ed., F.R.S.E., during author's absence from England in service of his country. Price 7s. 6d. net.

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- W.—Dr. S. A. K. Wilson, Lond.; Dr. P. J. Waldo, Lond.; Mrs. A. M. Walker, Lond.; Dr. H. Waller, Lond.; West Riding County Council, Wakefield, Clerk to the; Dr. B. W. A. Walker, Oxford; West London Post-Graduate College, Dean of; War Pensions Statutory Committee, Lond.; Mr. G. H. Watson, Hull; Dr. T. A. Williams, Washington.

Letters, each with enclosure, are also acknowledged from—

- A.—Capt. M. B. Arnold, R.A.M.C.; A. H.; Mr. E. Arnold, Lond.
- B.—Miss Broad, Bournemouth; Mr. A. E. Bartrum, Bawdley; Brixton Dispensary, Lond., Sec. of; Dr. C. Burns, Stonehaven; Capt. E. C. Bowden, R.A.M.C.; Bedford County Hospital, Sec. of; Dr. L. H. Bennett, Birmingham; Messrs. F. J. Baker and Co., Lond.; British Drug Houses Co., Lond., Sec. of.
- C.—Cafolin Co., Lond., Sec. of; Capt. W. E. Cooke, R.A.M.C.
- D.—Mr. R. De Martini, Brighton; Miss D. Dix, Johannesburg; Mr. C. B. Dyson, Louth; Deptford Corporation, Lond., Acct. to the; Messrs. Dowle and Marshall, Lond.; Duff House, Banff, Sec. of.
- E.—E. U.; Mr. E. Evans, Felinfach.
- F.—Lieut. J. W. Frew, R.A.M.C.; Dr. A. Foster, Leicester.
- G.—Mr. J. F. Gell, Nottingham; Mr. H. A. Gearing, Banstead; Dr. H. T. Gillett, Oxford; G. H.; Capt. P. Gosse, R.A.M.C.; General Accident, Fire, &c., Assurance Corporation, Lond., Manager of; G. F. M.
- H.—Mr. F. M. Hughes, Gravesend; Mr. J. Heywood, Manchester; Haydock Lodge, Newton-le-Willows, Sec. of.
- I.—Ingham Infirmary, South Shields, Sec. of.
- J.—Mr. A. R. Jennings, Lond.; Jessop Hospital for Women, Sheffield, Sec. of.
- K.—Messrs. H. S. King and Co., Lond.; Kingsland, Stoke-on-Trent.
- L.—Dr. D. Lynch, Lincoln; Messrs. H. K. Lewis and Co., Lond.
- M.—Dr. H. Mason, Northallerton;
- Dr. J. B. Mennell, Lond.; Mr. C. H. Mott, Burslem; Macmillan Co. of Canada, Toronto; Mrs. Myers, Cambridge; Manchester Hospital for Consumption, Sec. of; Mr. F. G. Mason, Weston; Mr. D. Maguire, Metheringham; Dr. T. D. Manning, Weymouth; Medicus, Wrexham.
- N.—Northampton County Borough, Acct. to the; Nurses Co-operation, Lond., Sec. of; Newcastle-upon-Tyne Sanatorium, Sec. of; North Lonsdale Hospital, Barrow in Furness, Sec. of; Nottingham General Hospital, Sec. of.
- O.—Mr. C. A. P. Osburne, Old Catton.
- P.—Mr. J. E. Purvis, Cambridge; Portsmouth Borough Asylum, Clerk to the; Dr. D. E. Powell, Lond.; William Pierson Medical Association, Orange, Librarian of.
- R.—Dr. M. J. Ryan, Crumlin; Dr. M. J. Rowlands, Lond.; Reuter's Telegram Co., Lond., Sec. of; Capt. G. M. Reid, C.A.M.C.
- S.—Messrs. Schultz and Co., Lond.; Salford Guardians, Clerk to the; Mr. W. H. Saville, Loughborough; Sheffield Royal Infirmary, Sec. of; Mr. R. H. Spurrier, Newport, Essex; Mrs. Stoney, Milloom; Dr. C. Simpson, Towcester.
- T.—Messrs. Toacker and Co., Lond.; Mr. W. R. Tuckett, Woodhouse Bayes; Mrs. Twaite, Lond.; Messrs. Tindall and Jarrold, Chelmsford.
- W.—Capt. R. Wilkinson, R.A.M.C.; Messrs. J. Wright and Sons, Bristol; Dr. C. P. White, Lond.; Messrs. W. J. Wilcox and Co., Lond.; Mr. D. W. Woodruff, Godmersham.

An Analysis

OF

CASES OF TETANUS TREATED IN HOME MILITARY HOSPITALS

FROM AUGUST 1ST, 1915, TO JULY 31ST, 1916.

By SIR DAVID BRUCE, C.B., F.R.S., F.R.C.P.,
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LAST year an analysis of cases of tetanus treated in home military hospitals between August 4th, 1914, and July 31st, 1915, was made out and published on Oct. 23rd, 1915, in the *British Medical Journal* and *THE LANCET*. The present paper is a continuation of the same subject, and gives an analysis of the cases occurring in home military hospitals from August 1st, 1915, to July 31st, 1916.

During the past year reports on 195 cases have been sent in; of these, 99 recovered and 96 died—a mortality of 49·2 per cent. In the preceding year there were 231 cases, with a mortality of 57·7 per cent.

THE DISTRIBUTION OF CASES OF TETANUS BETWEEN AUGUST 1ST, 1915, AND JULY 31ST, 1916.

Diagram I. represents the number of cases which occurred in each month. This diagram merely gives the number of cases which occurred in home hospitals during each month, without relation to the number of wounded, this information not being available at present. The rise in the number of cases during October and July represents the rise in the number of wounded men due to more activity at the front and not to any effect of season.

RELATION OF THE NUMBER OF DAYS WHICH ELAPSED BETWEEN THE DATE OF WOUND AND THE ONSET OF SYMPTOMS AND THE RATE OF MORTALITY.

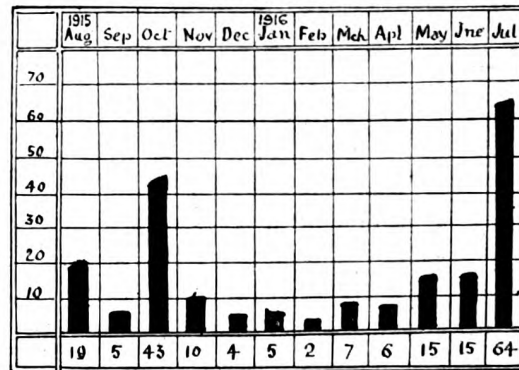
Diagram II. shows that in the cases dealt with, if the symptoms of tetanus appeared within ten days of receiving the wound, the mortality was 81·5 per cent.; if between the eleventh and twenty-fifth day, 52·2 per cent.; the remaining 55 cases, with an incubation period of from 26 to 330 days, 27·2 per cent.

THE INCUBATION PERIOD, OR NUMBER OF DAYS WHICH ELAPSE BETWEEN THE DATE OF WOUND AND THE ONSET OF TETANUS SYMPTOMS.

Curve A shows the number of cases which occurred on each day from the fourth day after the date of wound.

From this curve it will be seen that in the cases of tetanus under consideration more occurred on the eleventh day after the wound than on any other day. The incubation period during 1915-16 varied from 4 to 330 days. On comparing this curve with that of the preceding year it will be seen that

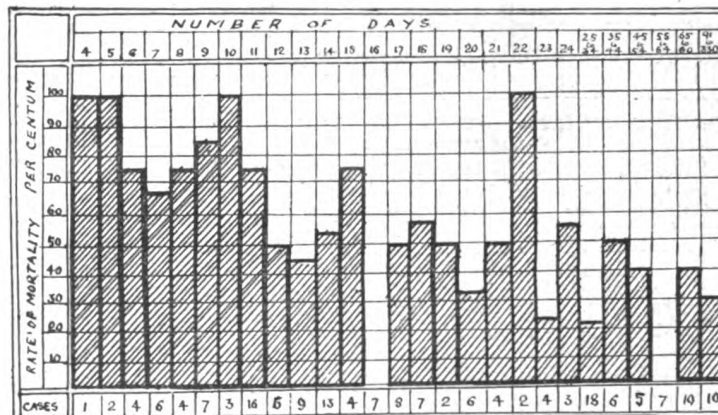
DIAGRAM I.



more cases with a short incubation period occurred in 1914-15 than in 1915-16, and that more cases with a long incubation have occurred in the latter series than in the former. In 1914-15 there were 87 cases with an incubation period up to 10 days; in 1915-16 there were only 27 cases with this short incubation period.

In 1914-15 there were only 12 cases with an incubation period of more than 22 days; whereas in 1915-16 the number of such cases was 62. This may be due to the introduction

DIAGRAM II.

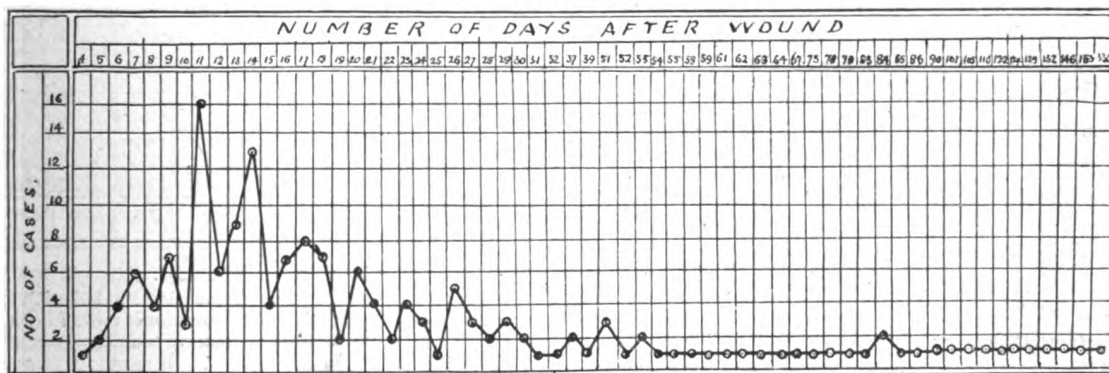


of prophylactic injections which, it will be remembered, were only begun some months after the beginning of the war.

TETANUS OCCURRING AFTER OPERATIVE INTERFERENCE WITH THE WOUND.

Table I. gives the cases, 15 in all, in which tetanus is reported to have followed on an operation. It would almost appear as if in some cases everything was prepared for the onset of the tetanic symptoms, only awaiting the stimulus of the operation. Thus in 3 cases the symptoms appeared 24 hours after the operation and one within two days.

CURVE A.



In not one of these cases was a prophylactic dose of anti-toxin reported to have been given at the time of the operation. There were 9 recoveries and 6 deaths, a mortality of 40.0 per cent.

TABLE I.

| No. of case. | Date of wound. | Date of operation. | Date of tetanus. | Days after wound. | Days after operation. | Nature of wound. | Nature of operation. | Recovered. | Died. |
|--------------|----------------|--------------------|------------------|-------------------|-----------------------|--------------------------------|-----------------------|------------|-------|
| 82 | 12/11/14 | 3/12/14 | 5 12 14 | 23 | 2 | L. hand. | Opened up. | R | — |
| 210 | 28/4/15 | 13/5/15 | 14 5 15 | 16 | 1 | R. leg. | " | — | D |
| 219 | 1/5/15 | 18/6/15 | 26/6/15 | 56 | 8 | L. thigh, fracture. | Plating bone | — | D |
| 235 | 9/5/15 | 6/7/15 | 7 7 15 | 58 | 1 | Sole r. foot, l. arm, l. foot. | Amputation. | R | — |
| 246 | 24/5/15 | 18/8/15 | 27 8 15 | 95 | 9 | R. abdominal wall. | Removal of bullet. | R | — |
| 253 | 21/10/14 | 6/9/15 | 16 9 15 | 330 | 10 | R. thigh, fractured femur. | Abscess opened. | R | — |
| 260 | 25/9/15 | 4/10/15 | 12 10 15 | 17 | 8 | L. hand. | Amputation. | — | D |
| 281 | 8 10 15 | 18 10 15 | 26 10 15 | 18 | 8 | L. shoulder. | Shrapnel removed. | R | — |
| 282 | 8 8 15 | 20 10 15 | 23 10 15 | 76 | 3 | R. buttock, r. abdom. wall. | Fell; wound reopened. | R | — |
| 292 | 6 7 15 | 27 10 15 | 7 11 15 | 124 | 11 | Appendicitis in France. | Opened up again. | — | D |
| 325 | 14 2 16 | 2/5 16 | 8/5 16 | 83 | 6 | R. radius. | Plating. | — | D |
| 335 | 27/1/16 | 26/5 16 | 7 6 16 | 131 | 12 | R. tibia. | Operation on bone. | R | — |
| 344 | 10/6/16 | 26/6 16 | 9/7 16 | 29 | 13 | R. clavicle. | Removed bullet. | — | D |
| 396 | 1/4/16 | 13/7 16 | 29 7 16 | 110 | 7 | Ankle. | Amputation. | R | — |
| 411 | 1/7/16 | 22/7 16 | 23 7 16 | 22 | 1 | R. shoulder and back. | Shrapnel removed. | R | — |

ON OPERATIVE INTERFERENCE AFTER TETANUS SYMPTOMS HAVE APPEARED.

There is a good deal of difference of opinion as to whether a wound should be actively interfered with after the onset of tetanic symptoms.

TABLE II.

| No. of case. | Date of tetanus. | Date of operation. | Days before operation. | Nature of wound. | Nature of operation. | Recovered. | Died. |
|--------------|------------------|--------------------|------------------------|--------------------------------------|---------------------------|------------|-------|
| 50 | 22/9/14 | 23/9/14 | 1 | L. elbow, l. buttock. | Wound opened up | — | D |
| 54 | 10/11/14 | 14/11/14 | 4 | Fracture of r. tibia. | Amputation. | R | — |
| 70 | 28/10/14 | 28/10/14 | 0 | Finger, fracture. | " | R | — |
| 73 | 21/9/14 | 21/9/14 | 0 | Lacerated wound, l. ankle. | Wound opened up | R | — |
| 74 | 26/9/14 | 26/9/14 | 0 | Palm of hand, fracture. | Amputation. | — | D |
| 77 | 28/10/14 | 28/10/14 | 0 | Comp. fracture, l. tibia and fibula. | " | — | D |
| 85 | 8 10 14 | 11/10/14 | 3 | L. upper arm. | Wound opened up | — | D |
| 147 | 29/11/14 | 29/11/14 | 0 | Palm of hand. | Amputation. | R | — |
| 163 | 9 1 15 | 9 1 15 | 0 | L. thumb, fracture. | " | R | — |
| 193 | 3 10 14 | 4/10/14 | 1 | L. foot, fracture. | " | R | — |
| 230 | 18/6/15 | 18/6/15 | 0 | Comp. fracture l. leg. | " | — | D |
| 216 | 30/5/15 | 30/5/15 | 0 | Shell wound r. arm. | Bullet removed. | — | D |
| 257 | 3 10 15 | 4/10/15 | 1 | L. hand and calf. | Amputation. | — | D |
| 258 | 1 10 15 | 2/10/15 | 1 | L. hand. | " | — | D |
| 290 | 13 10 15 | 3 11 15 | 21 | Comp. fracture, l. humerus. | " | — | D |
| 390 | 14 7 16 | 14 7 16 | 0 | R. thigh. | Bullet and cloth removed. | R | — |
| 401 | 22 7 16 | 22 7 16 | 0 | Lacerated wound, suprapubic. | Wound opened up | — | D |
| 422 | 22 7 16 | 24 7 16 | 2 | Comp. fracture, humerus. | Amputation. | R | — |
| 423 | 14 7 16 | 14 7 16 | 0 | Lacerated wound, r. shoulder. | Bullet, &c., removed. | R | — |
| 440 | 29 6 16 | 29 6 16 | 0 | Multiple shell wounds. | Casing of bullet removed. | R | — |
| 284 | 17 10 15 | 21 10 15 | 4 | R. leg. | Amputation. | R | — |

It seems under the circumstances to be most natural and rational thoroughly to open out and clean up the wound,

and so remove the *fons et origo mali*. On the other hand, the tetanus toxin in the wound may only be leaking very slowly into the nerves, and the operation may open up a large and new absorbent surface. On this account there are many surgeons who deprecate interference at this time, contenting themselves with washing out the wound as thoroughly as possible and waiting until the tetanic symptoms subside before proceeding to more heroic measures.

On the whole the evidence seems to be in favour of waiting until the tetanus has been got under control, and the blood and tissues are flooded with antitoxin before undertaking any drastic interference with the wound.

Among 195 cases under consideration there have been 21 in which such an operation has been performed, and these are set down in Table II. There are only 21 cases reported, and of these 11 recovered and 10 died, a mortality of 47.6 per cent. It is evident, therefore, that no answer to this question can be gained from these few examples.

TREATMENT OF TETANUS BY ANTITETANIC SERUM.

A. Preventive Treatment.

Among the 195 cases, 77 are noted as having been treated with antitetanic serum before the onset of symptoms; all these were inoculated overseas. Not a single case is reported as having received a prophylactic injection of antitoxin in any home hospital.

Although only 77 are noted in the tetanus reports as receiving a primary prophylactic injection in France, it is probable that almost every case received it; at least, so it is stated by various medical officers from the front. Of these 77, 44 recovered and 33 died, giving a mortality of 42.8 per cent. Of the remaining 118, of which there is no record of prophylactic treatment, 56 recovered and 62 died: 52.5 per cent.

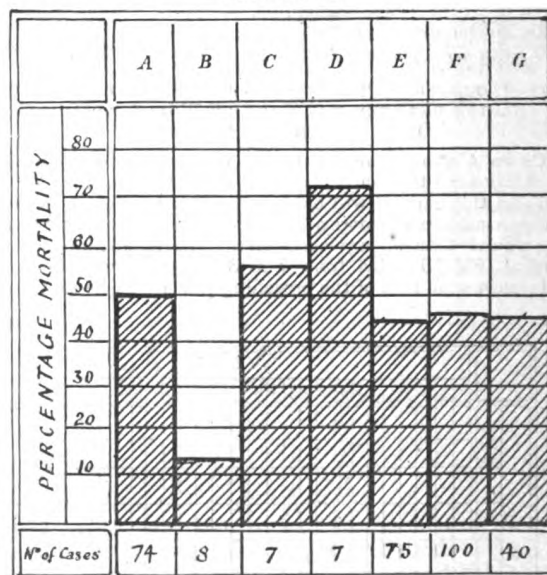
TABLE III.

| | Recovered. | Died. | Per cent. |
|---|------------|-------|-----------|
| 54 cases inoculated on day of wound ... | 31 | 23 | 42.6 |
| 8 " " one day after wound ... | 4 | 4 | 50.0 |
| 3 " " two days after wound ... | 3 | 0 | 0.0 |
| 1 " " three " " ... | 1 | 0 | 0.0 |
| 2 " " five " " ... | 1 | 1 | 50.0 |
| 9 cases unaccounted for. | | | |

Of 50 cases inoculated on day of wound, the 29 cases which recovered had an average incubation period of 37.8 days. Of the 21 fatal cases the average incubation was 33 days.

Of 67 cases inoculated within 5 days of having been wounded, the 38 cases which recovered had an average incubation period of 37.7 days; the 29 which died had an average incubation period of 28 days.

DIAGRAM III.



B. Curative Treatment.

Out of the total of 195 cases the number treated with antitetanic serum after the onset of symptoms was 175 (90 per cent.). Twenty cases did not receive curative treatment with antitetanic serum in England. Of these 6 recovered

and 14 died; mortality, 70 per cent. Of the 175 cases which received serum treatment 92 recovered and 83 died; mortality, 47·4 per cent.

| | Per cent. |
|---|-----------|
| Of the 175 cases, 74 were treated by subcutaneous injections alone (Diagram III. A); 37 recovered, 37 died; mortality ... | 50·0 |
| Of the 175 cases, 8 were treated by intramuscular injections alone (Diagram III. B); 7 recovered, 1 died; mortality ... | 12·5 |
| Of the 175 cases, 7 were treated by intravenous injections alone (Diagram III. C); 3 recovered, 4 died; mortality ... | 57·0 |
| Of the 175 cases, 7 were treated by intrathecal injections alone (Diagram III. D); 2 recovered, 5 died; mortality ... | 71·4 |
| Of the 175 cases there were 75 cases which included intrathecal injections (Diagram III. E); 40 recovered, 35 died; mortality ... | 46·7 |
| Of the 175 cases there were 100 cases which did not receive intrathecal injections (Diagram III. F); 52 recovered, 48 died; mortality ... | 48·0 |
| Of the 175 cases there were 40 cases which included intravenous injections (Diagram III. G); 21 recovered, 19 died; mortality ... | 47·4 |

It would appear from Diagram III., which represents this graphically, that no advantage in favour of intrathecal injections emerges from these figures as seemed to be the case in the previous year.

IS THERE ANY OTHER EVIDENCE TO BE FOUND IN THESE REPORTS THAT THE INTRATHECAL ROUTE HAS ANY ADVANTAGE OVER THE OTHER METHODS OF INJECTION?

Treatment Beginning on the Day of the Onset of the Disease.

| | Per cent. |
|--|-----------|
| During the year 1915-16 95 cases were treated with antitetanic serum on the day the symptoms declared themselves. 45 recovered, 50 died; mortality ... | 52 |
| Out of the 95 cases the following received antitoxin, but not intrathecally, on the day of the disease. 77 cases; 33 recovered, 44 died; mortality ... | 57 |
| Out of the 95 cases the following received antitoxin intrathecally on the day of the onset of the disease. 18 cases; 12 recovered, 6 died; mortality ... | 33 |

Treatment Beginning on the Day Following the Onset of Disease.

| | |
|---|----|
| The following cases received antitoxin, but not intrathecally, one day after the onset of the disease. 24 cases; 13 recovered, 11 died; mortality ... | 46 |
| The following cases received antitoxin intrathecally one day after the onset of the disease. 10 cases; 6 recovered, 4 died; mortality ... | 40 |

Treatment Beginning Two Days After the Onset of the Disease.

| | |
|--|----|
| The following cases received antitoxin, but not intrathecally, two days after the onset of the disease. 12 cases; 7 recovered, 5 died; mortality ... | 42 |
| The following cases received antitoxin intrathecally two days after the onset of the disease. 6 cases; 4 recovered, 2 died; mortality ... | 33 |

There is a difference of 24 per cent. in favour of the intrathecal method when the treatment was begun on the day of the onset of the disease; a difference of 6 per cent. when the treatment was begun on the day after the onset of the disease; and a difference of 9 per cent. when the treatment was begun on the second day after the onset.

THE INFLUENCE OF DOSAGE ON THE CURATIVE ACTION OF ANTITETANIC SERUM.

(a) *The Total Quantity of Antitoxin Given during the Attack.*

| | Per cent. |
|---|-----------|
| Out of the 175 cases, 4 received 1000 units or under; 1 recovered, 3 died; mortality ... | 75 |
| Out of the 175 cases, 33 received 1001 to 5000 units; 19 recovered, 19 died; mortality ... | 50 |
| Out of the 175 cases, 27 received 5001 to 10,000 units; 13 recovered, 14 died; mortality ... | 52 |
| Out of the 175 cases, 20 received 10,001 to 15,000 units; 8 recovered, 12 died; mortality ... | 60 |
| Out of the 175 cases, 19 received 15,001 to 20,000 units; 6 recovered, 13 died; mortality ... | 68 |
| Out of the 175 cases, 21 received 20,001 to 30,000 units; 15 recovered, 10 died; mortality ... | 40 |
| Out of the 175 cases, 8 received 30,001 to 40,000 units; 6 recovered, 2 died; mortality ... | 25 |
| Out of the 175 cases, 11 received 40,001 to 60,000 units; 6 recovered, 5 died; mortality ... | 45 |
| Out of the 175 cases, 12 received 60,001 to 100,000 units; 9 recovered, 3 died; mortality ... | 25 |
| Out of the 175 cases, 11 received 100,001 to 285,000 units; 10 recovered, 1 died; mortality ... | 9 |

(b) *The Daily Quantity of Antitoxin Given.*

| | |
|--|----|
| Out of the 175 cases, 5 received 1000 or under; 2 recovered, 3 died; mortality ... | 60 |
| Out of the 175 cases, 99 received 1001 to 5000 units; 52 recovered, 47 died; mortality ... | 47 |
| Out of the 175 cases, 38 received 5001 to 10,000 units; 22 recovered, 15 died; mortality ... | 45 |
| Out of the 175 cases, 9 received 10,001 to 15,000 units; 5 recovered, 4 died; mortality ... | 44 |
| Out of the 175 cases, 11 received 15,001 to 20,000 units; 5 recovered, 6 died; mortality ... | 54 |
| Out of the 175 cases, 8 received 20,001 to 30,000 units; 4 recovered, 4 died; mortality ... | 50 |
| Out of the 175 cases, 2 received 30,001 to 40,000 units; 1 recovered, 1 died; mortality ... | 50 |
| Out of the 175 cases, 2 received 40,001 to 60,000 units; 1 recovered, 1 died; mortality ... | 50 |

On studying these figures it must be confessed that no satisfactory deduction as to the influence of dosage can be made from them. Except in the second and third series the numbers are too small.

To conclude this section on the curative value of antitoxin it is apparent that little or no addition to our knowledge can be gained from the figures taken from these 1915-16 reports. It is true that the mortality of the 20 untreated cases is 70 per cent., whereas that of the 175 treated cases is 47·4 per cent., but the number of the untreated cases is small.

The matter must, therefore, be left in the same unsatisfactory position as last year when it was stated "the main conclusions to be drawn from a study of these cases of tetanus treated therapeutically by antitetanic serum is that it seems to be highly probable that the serum has little or no effect on the course of the disease." But it must be borne in mind that the number of cases under consideration is small, that the greatest variety in the modes of treatment obtains, and that also the greatest variety is found in the mildness or gravity of the cases themselves. If during the next year some uniform treatment was adopted, such as that recommended by the Tetanus Committee in their Memorandum, it is possible that some light might be thrown on this extremely obscure question of serum therapy.

All evidence goes to show that antitoxin is the more effective the earlier in the disease it is given. This is proved in diphtheria, and is also probably true for tetanus. In order to give the antitoxin a chance, therefore, early treatment should be striven for, and if this were done and the antitoxin applied thoroughly, one would not despair of reducing the mortality to, say, 20 per cent. instead of 50 per cent. at which it stands for the past year.

OTHER THERAPEUTIC REMEDIES.

1. *Carbolic Acid Injections.*

During the year 1915-16, 22 cases were treated by this drug. 7 recovered, 15 died; mortality, 68 per cent. In Table IV. the single injections and daily quantities are expressed in grains of carbolic acid. The cases are arranged according to the amount of carbolic acid given per diem, from 0·54 grain in Case 288 to 35 grains daily in Case 270.

TABLE IV.

| No. of case. | Single dose in grains. | Quantity per diem in grains. | Total quantity injected. | Recovered. | Died. |
|--------------|------------------------|------------------------------|--------------------------|------------|-------|
| 288 | 0·27 | 0·54 | 1·08 gr. in 2 days. | — | D. |
| 259 | 1·00 | 1·00 | 1·00 gr. in 1 day. | — | D. |
| 337 | 0·68 | 1·36 | 1·36 gr. in 1 day. | — | D. |
| 258 | 0·23 | 3·42 | 17·10 gr. in 5 days. | — | D. |
| 398 | 1·00 | 4·00 | ? | R. | — |
| 241 | 0·68 | 4·42 | 8·84 gr. in 2 days. | — | D. |
| 238 | 0·82 | 4·92 | 29·5 gr. in 6 days. | — | D. |
| 321 | 1·64 | 4·92 | ? | — | D. |
| 423 | 0·45 | 5·20 | 25·90 gr. in 9 days. | R. | — |
| 385 | 0·45 | 5·40 | 16·20 gr. in 3 days. | R. | — |
| 384 | 0·91 | 7·28 | ? | R. | — |
| 344 | 0·68 | 8·16 | ? | — | D. |
| 355 | 1·10 | 10·90 | 10·90 gr. in 10 hours. | — | D. |
| 390 | 0·91 | 10·92 | ? | R. | — |
| 333 | ? | 15·00 | ? | R. | — |
| 249 | 7·25 | 16·31 | 65·25 gr. in 4 days. | — | D. |
| 395 | 1·35 | 16·32 | 293·00 gr. in 18 days. | R. | — |
| 270 | 4·37 | 35·00 | 43·00 gr. in 14 days. | — | D. |
| 292 | 1·36 | ? | ? | — | D. |
| 236 | ? | ? | ? | — | D. |
| 326 | ? | ? | ? | — | D. |
| 426 | ? | ? | ? | — | D. |

2. *Magnesium Sulphate.*

During the past year 18 cases have been treated by this drug, 6 by subcutaneous injection, 1 intravenously, and 8 intrathecally. In 3 the route is not stated. Of these 18 cases, 4 recovered and 14 died; mortality, 78 per cent.

CONCLUSIONS.

1. In the 195 cases of tetanus under review the mortality was 49·2 per cent.
2. Cases with a short incubation were more fatal than those with a longer incubation.

3. The greatest number of cases occurred on the eleventh day after the wound.

4. There are no allusions to the use of antitetanic serum as a prophylactic in home military hospitals.

5. In regard to the therapeutic effect of antitetanic serum the evidence as collected from the 1915-16 reports is not conclusive.

6. In the cases under consideration the advantage of the intrathecal route over the subcutaneous or other routes is also not conclusive.

7. There is no evidence that any benefit accrued to the cases treated by carbolic acid or magnesium sulphate injections.

8. With our present knowledge the treatment of a case of tetanus might be as follows:—

- (a) Place in a quiet, darkened room under the care of a sympathetic and capable nurse. "Rest, sleep, and food" are looked upon as the first essentials of treatment.
- (b) If thorough surgical treatment is carried out on wounds from the beginning, so as not to allow the presence of necrotic tissues or foreign bodies, the number of cases of tetanus should sensibly diminish, if not altogether disappear. But if a case does occur then the wound should not be actively interfered with until the tetanic symptoms have subsided.
- (c) The intrathecal injection of large doses of antitoxin, of high potency if available, should be begun at once, and supplemented by intramuscular and subcutaneous injections.
- (d) In addition, if necessary, the patient should receive sedatives, of which morphia in $\frac{1}{4}$ -grain doses and administered every four hours is perhaps the most suitable. Chloral, chlorotone, and other sedatives are also given by the mouth or rectum.

Some Practical Observations

ON THE

INJURIES OF WAR.

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PRELIMINARY OBSERVATIONS.

It may seem that so much has lately been written on the complicated and septic wounds of the present war that observations regarding them are open to the charge of vain repetition. Nevertheless, individual experience, if accurately related, and conclusions drawn from personal observation, from actual practice, may not be devoid of value for the consideration and guidance of others who have not the advantage of extensive hospital experience or who may be taking charge of these cases for the first time. I have now had sufficient practice in these injuries to venture upon the relation of some brief observations regarding them.

The Use of Antiseptics.

At the outset I express my obligations to the long and laborious articles which have lately appeared from time to time in the medical press. Some of these are very involved and difficult to understand. But when carefully studied and the factor of personal controversy eliminated, there seems to be a consensus of opinion that there is no known antiseptic which certainly has the power of destroying organisms in septic wounds, either at the time of their infection or afterwards. That if in sufficient chemical strength to destroy germs, the fluids must also harm the tissues of the patient. A perfect antiseptic is desirable, but yet to be found. Also that wounds inflicted by penetrating missiles are so devious and intricate, so often blocked by muscle and the like, that antiseptic agents cannot be brought into contact with all the pockets and recesses of the wound, even if their potency to destroy germs were admitted. The striking successes of antiseptic surgery are found in wounds made by the surgeon in non-infected tissues. When I left London in 1905 it was exceptional for any case to "go wrong" under the old principles of antiseptic

technique. In the Waterloo Road Hospital, then an old and not too sanitary building, 72 major operations were done consecutively by myself, with little fever and no sepsis or suppuration. I made a point, for several years, of following the practice of other hospitals than my own. I found the results generally excellent. But hardly two surgeons used the same agent, and each was convinced of the omnipotence of his own methods, and somewhat contemptuous of those who differed from him. The various applications used now, and the usually satisfactory termination of septic wounds, raise a strong feeling that the reparative processes of the patient, I mean exudation of serum, of leucocytes, and organisation of plastic lymph, may have more to do with the result than the actual application used. And it is upon the evidence that these processes are favoured and accelerated by saline fluids that the advocacy of the use of these fluids depends. In this connexion it is interesting to note that the application of sea water has been for ages a vaunted remedy among country folk in wounds and tuberculous discharging sinuses.

In past years, nothing surprised me more than the excellent results obtained by the late Mr. Lawson Tait, who advocated thorough and plentiful flushing with hot water and strict cleanliness. From personal observation I can aver the result of his abdominal cases left nothing to be desired. After much uncertainty, I reverted to the early principles of Lister, and used carbolic acid throughout. I do not know that my results were inferior to those of other surgeons. Although it is stated on experimental evidence that the use of antiseptics may be actually prejudicial to repair in septic wounds, I certainly have seen no clinical evidence that this is the case. I still prefer to employ them, and their deodorising influence is not entirely to be ignored. The reflection that they must be prejudicial rather than favourable to the growth of organisms, seems a fair one. The solution of hypochlorous acid was early introduced at the hospital I assist at in Exeter by Dr. Samways, who has the care and after-treatment of many of the cases operated upon by myself. It seems both efficient and cheap. But I am unable to state that the results are better than would have been obtained by other agents, as carbolic acid, lysol, or the solutions of mercury. Mr. Dyball, the commanding officer, tells me he is unable to decide that any one solution does better than another, in his cases. Still, I do not think the offensive and sloughing wounds would have done so well, had only hot water, or salines, been employed.

General Remarks on Treatment.

If the life and proliferation of organisms are prejudicially affected in even a small degree by antiseptic fluids, there is a reason for using them. I can assert with some degree of confidence, however, that the diminution of quantity of septic organisms left in a wound, and especially of the media in which they flourish, is of paramount importance. I feel sure the leading principle of practice in these complicated infected wounds is the mechanical removal of micro-organisms, and the insurance of a free exit of serum, blood clot, foreign bodies, as pieces of clothing, and portions of disintegrated tissue. I cannot but express my opinion, with all deference, that the "sealing up" of the orifices of these wounds with any material, however powerful as an antiseptic, is an error, and may be compared in my provincial experience to a gardener placing a clod of turf on the orifice of a wasps' nest.

On the contrary, the wound, if needful, should be enlarged, and counter openings made in all dependent pockets and recesses. Large tubes should be inserted and the wounds powerfully flushed. I regard the actual agent used for flushing as of far less importance than the mechanical removal of the putrid discharge of all the "media" in which organisms flourish. The more perfectly this is done the less the patient will suffer from sepsis. This much is certain. The syringes used for this purpose are often too small and inefficient, and if an irrigator be used the receptacle should be well raised and the nozzle capacious to ensure a strong stream of the cleansing fluid. Proper irrigation and cleansing of septic wounds is the keynote to their successful treatment, and not so much the chemical action of the fluids employed. This is not to be ignored, but is of secondary importance.

It is convenient here to draw attention prominently to the great and important subject of the resisting power of the tissues and of the patient in septic wounds. The term "physiological resistance" has been well used by a recent

authority, and it well expresses what is meant, though it is exceedingly difficult to discuss and describe a matter ill understood, but of vast practical importance. It is easy to miss the obvious, and I feel sure this aspect of the question has not received the thought and attention it deserves. The extraordinarily rapid healing of bad wounds in animals is proverbial. Nothing is more striking also than the quick healing of wounds in those whose lives approximate to those of the animal, who are constantly exposed to air and sun, who take little or no alcohol, and live upon simple and nutritious food. The physical development of such individuals is manifest, and if added to all this be youth, there is scarcely anything that will destroy such persons, except the worst injuries in vital parts. In such individuals reparative processes, exudations of lymph and leucocytes, are correspondingly active, and in striking contrast to the healing power of anæmic and alcoholic inhabitants of large cities. I consequently maintain that exposure to air and sun, near the sea-coast or on moorland, is of the first importance, and at least as worthy the attention of surgeons as the use of any particular chemical lotion. I am aware that this opinion cannot be generally shared by responsible authorities, or we should have seen far more wounded treated in open-air hut hospitals than in buildings in large cities. The influence of open-air treatment is as marked in septic wounds as in tuberculous lesions, and the separation of deeply-seated necrosed bone is greatly facilitated. A nutritious diet is also essential, and I am old-fashioned enough to believe in the efficacy of a daily allowance of good porter, or, in the more fortunate, of port wine. The administration of decoctions of bark of quinine, or, in the very anæmic, of the milder non-constipating preparations of iron, are not without use. Both these remedies were in favour among the surgeons of a past generation.

Among the many advantages this treatment offers is not only the promotion of rapid healing, but the possibility of convalescence occurring at the original hospital, the collecting of an indefinite number of wounded together, without overcrowding, and under military supervision, and the far greater economy.

If clinical proofs were needed of the value of mechanical removal of discharges, such are to be found in the results obtained by the water bath or continuous irrigation. This should be a standard treatment for crushed and septic wounds, especially of the extremities, and here I believe I shall meet with but few dissentients. The beneficial results obtained from the warm-water bath are so manifest it is not needful to emphasise the value of the treatment.

Dressings.—Vaccine Treatment.

The question of external dressing may next receive attention. It is hard to believe that sufficient virtue exists in any external dressing as to affect for good or bad the recesses of a septic wound separated from the dressings by skin, fascia, and, perhaps, several inches of soft parts. There is here no question of infection through the atmosphere. The harm is already done. A kind of fetish belief that an external dressing can influence such conditions still lingers in our minds, and this leads to the extraordinary number of applications used, and the highly flavoured stories of their "healing powers" in the press and amongst the laity. What we should aim at is an application which will absorb the discharge and deodorise it, which is cheap, and which can constantly be removed and burned as it becomes foul and saturated. I think the constant removal of saturated dressings is of very great importance, and the bandages should never be applied tightly to impede the flow of pus, as is too often the case. In private practice I always used medicated wools, especially boric acid wool, and mercuric wools. But it is impossible to use these materials in bulk in this great war on account of expense. My favourite material is the antique picked oakum, and pads of pine-wood sawdust are deodorising, absorbent, and very cheap. At present sphagnum moss is largely in fashion. I venture to express my belief that none of these materials exercise any influence on the actual healing of the wound, and they are only useful in absorbing discharges. It is over 30 years ago since Sir George Humphry advocated the treatment of wounds by leaving them entirely exposed to the air without any dressings at all. But the discharge was constantly removed and washed away. This was in the early days when antiseptic surgery was in its infancy. I saw such

cases as excisions of the knee, compound fractures, and the wounds made after removal of tumours treated with success in this way; the results were at least better than followed from leaving discharging wounds for many hours bathed in offensive dressings sodden with pus. The constant removal of the discharge was especially insisted upon. In a number of cases of lateral lithotomy in which this surgeon had remarkable, I believe unbroken, success, a series of sponges were constantly used, wrung out in water, and again applied to the wound. Like many other things, this practice of exposure of wounds has been lately renewed, but Humphry was the originator of it. In cases of empyema I much prefer that no bandage be employed, the patient lying upon a pad of loosely arranged medicated wool or other absorbent wool, which is constantly removed by the nurse and replaced as needful. Too often these cases are left in "a bath" of pus beneath the bandages, the condition being both deleterious and offensive.

In superficial granulating wounds, on the contrary, when the dressing is in actual contact with an extensive surface, external applications may be productive of an influence for good or harm, not infrequently the latter. In the dressing of such wounds it is important to save pain and to prevent the removal of epidermic cells from the margins. Therefore it is important to use no material which sticks to the wound. Attention has recently been drawn to the use of thin celluloid for this purpose at St. Mary's Hospital. I have for years employed the old-fashioned "green protective" of Lister for this purpose, and I know of nothing better. The material can be cleaned and soaked in whatever antiseptic application the surgeon has most confidence in. In dressing large granulating wounds, it must be remembered the absorbent powers of the surface are very great, and the application must be of weak chemical strength. I believe warm salines to be very good for this purpose. But powerful chemicals may do harm, as was too often exemplified in the period of the iodoform craze, when illness and even death occurred from this very reason. Skin-grafting should be energetically employed in superficial wounds, and it is sometimes useful to dissect flaps from the margin and lay them on the wound, securing them by catgut sutures. This gives a greatly increased area from which the epidermis can grow over the surface.

I unfortunately had to leave London too soon to form a personal estimate of the value of vaccine treatment of septic wounds and have only been able to understand it by a study of the work of others. The opinions are very conflicting, but one thing is clear. It is useless to employ this method if discharge is pent up, if imperfect drainage exists, or an unsuspected abscess is present, deeply seated, and undetected. I have found that the persistence of fever and illness in the patients of the present war are always due to imperfect drainage and impeded exit of foul discharge; and when this is put right the temperature falls. This has been my experience in a large number of cases. But I should not hesitate to employ the aid of the bacteriologist in instances where septic symptoms and fever persisted, although perfect drainage, flushing, and elimination of all discharge were certainly effected. It would be of interest to know the opinion of others on what is obviously a very important practical point.

SUPERFICIAL WOUNDS.

The wounds inflicted in the present war are so diverse, extensive, and complicated that it is difficult to classify them. A large number are superficial, the missile tearing away skin, muscle, and fascia, with a small wound of entry and a large ragged wound of exit. The first question to decide is the necessity or otherwise of laying the whole wound open. This is advised by some surgeons as a routine practice. I think it well to avoid doing this if possible. These wounds when swollen, black, and sloughing, look very formidable, but after a few weeks of careful dressing they assume a far more favourable aspect. The undermined areas, when once granulating, will often heal together. And if any tracks have to be laid open, I think this is best done later on, when the surgeon is able to estimate how far healing is able to progress without operating. In all these wounds careful dressing, drainage, and great cleanliness are essential. And though the wounds must heal from the bottom the dresser must be careful the wounds are not really kept open by undue "stuffing" with gauze or lint. Any suturing of these wounds is not advisable, but healthy granulating surfaces may

sometimes be approximated by sutures with plates of lead or the old-fashioned quill suture with advantage. In all wounds, penetrating or superficial, the probe should never be used unless for a definite purpose of information. Its use constantly, and as a matter of routine, is much to be deprecated.

PENETRATING WOUNDS.

Penetrating wounds are divided into those which pass clean through the trunk or limbs and those which lodge in the tissues at a less or greater depth.

The nature and severity of these injuries will, of course, vary as to locality and the nature of the missile. The sharp-nosed bullet at high velocity may pass through a limb, or even the trunk, doing but little harm. A shrapnel bullet or piece of shell, the latter especially, may inflict the most serious injuries, smashing the bones beyond hope of repair, or tearing away the soft tissues, vessels, and nerves, and involving the parts struck in common ruin. A large number of wounds which have come under notice are those where a bullet passes straight through a limb. Here, when the bones and main vessels are intact, nothing but rest and strict cleanliness is needful. The contracting scar of these wounds often impedes the action of the muscles, especially in the calf of the leg, and massage and movements must be carefully instituted. It is wonderful how the main vessels escape injury, even when the bullet strikes directly over their course. A careful investigation of the condition of the main vessels should, however, always be made in these cases. They may be merely "notched," and then the bleeding below a dense fascia is very insidious. The pulse below may be but little affected, and the most reliable symptom is a loud bruit, which is generally heard over the seat of injury. Often both artery and vein are injured, and one of the various kinds of arterio-venous aneurysm ensues if the case be not promptly dealt with. The use of the stethoscope is very important in these injuries. As a rule it is the best practice to face these formidable lesions of the main vessels at once. Treatment by pressure is very unsatisfactory, and though it may control bleeding from the orifice of the wound, the hemorrhage goes on insidiously into the tissues of the limb, and much enhances the difficulty of subsequent operation, and increases the risk of subsequent gangrene. The circulation above, or on the cardiac side, should be controlled by the elastic cord. If this is impossible, it is safer to place a temporary ligature on the main vessel above than to trust to the fingers of an assistant. Digital pressure soon tires, and these operations may be very difficult and prolonged. A good method is to place a probe or sinus forceps beneath the vessel to be controlled, and pass over it an ordinary elastic letter-band. This, when removed, will be found not to have harmed or in any way injured the main vessel or its coats. A very free incision should be made, and this is the main secret of dealing quickly with these cases, which, when associated with much blood clot and inflammatory swelling, may be of extreme difficulty. The muscles are drawn aside with powerful retractors, and then the lesion of the vessels is usually found and can be remedied. I have adhered to the use of the ligature above and below the lesion in the vessels, for I have had no experience of closure of wounds in them with fine sutures. This operation, if it could be done safely, would be of especial value, but it sounds risky. The fear of gangrene in these cases is too well founded, but it is extraordinary how in these young and vigorous patients the circulation is maintained. We have recently had cases where the popliteal artery and vein have been tied and yet the limb maintained its nutrition. In the upper limb the risk of gangrene is comparatively small.

I have seen several cases where the main vessel has been torn across by a missile and has become spontaneously occluded, no subsequent bleeding having occurred. I have also seen several instances of occlusion of the main vessels after a severe crush of a limb, probably by thrombosis. Expectant treatment is all that is needed in these cases.

Unfortunately, the main nerves are often "smashed" across by bullets and pieces of shell. Immediate operations on these, owing to the septic state of the parts, give poor results, and it is usually better to wait for some months until the parts have healed. Then the surgeon will be confronted with difficulties I will mention later on.

(To be continued.)

SIX CASES OF OESOPHAGECTASIA.¹

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PROBABLY most museums of pathological anatomy contain specimens showing dilatation of the oesophagus which involves the greater part of the tube and is not due to the existence of a pouch. But though the condition is well known to the pathological anatomist, until recent years the clinician has been at a loss how to detect it, and has generally only discovered it at the post-mortem examination. The advent of the use of X rays and bismuth meals and of the oesophagoscope has rendered it possible for this condition to be demonstrated before death.

Dr. F. Parkes Weber is the first observer of recent years to publish a case of this kind which was completely diagnosed before death.² Dr. Arthur F. Hurst has more lately described a case discovered before death by means of X rays, and has used the term "achalasia of the cardia," preferring this term to that of "cardio-spasm."³

We have met with five cases, three of which were fatal, and we add a sixth which came under the care of Dr. Sidney Martin in 1892. With his permission we publish the notes of his case, because it presented similarly baffling symptoms at the bedside.

CASE 1.—The patient, aged 35, was admitted into University College Hospital under Dr. Martin's care on Sept. 17th, 1892, and died on Oct. 22nd in the same year. She was admitted because she had had attacks of great difficulty in breathing for about six weeks. Her story was that she had really been ailing for a little over two years, and her illness had begun whilst abroad with pain in the upper abdomen, accompanied by vomiting, which relieved the pain. There was no hæmatemesis, and she was treated, she said, for "congestion of the stomach." Similar attacks occurred periodically during the ensuing year; but in October, 1891, the pain became persistent, vomiting again giving her relief. These symptoms intensified until six weeks before admission, when a new symptom developed—namely, attacks of dyspnoea which came on night and day, especially at night and on lying down; the attacks would last about half an hour, and, as above stated, it was this symptom which caused her to seek admission. With regard to the pain and vomiting, the latter was lost altogether and the pain was much reduced if her diet consisted only of milk.

Physical examination.—The patient was a spare woman, and she showed marked inspiratory stridor on occasion, especially after exertion. There was frequent cough, sometimes "brassy" in character; the expectoration was mucoid and watery. The heart and lungs were found to be normal, and repeated examination of the larynx failed to show any abnormality. She had great difficulty in taking solid food; her sleep was disturbed by a cough, and whilst in hospital this grew worse; her temperature rose a little, and she developed dullness at the right base behind. During the night of Oct. 14th she had a very severe attack of dyspnoea, and stridor of an inspiratory type was again noticed. The use of amyl nitrite and of morphia failed to give relief, whereas chloroform was effective. She did not become blue in the attack. The cough persisted and the sputum became muco-purulent. On the evening of Oct. 20th the epigastric pain became very severe, and a return of the dyspnoea took place. The stridor was mainly inspiratory, but also expiratory. The patient became very livid, and chloroform, pushed to deep anaesthesia, gave no relief to her breathlessness. She then became unconscious after recovery from the chloroform anaesthesia, and remained so for 40 hours until her death; only on one or two brief occasions was there any slight return to consciousness; during this period the pulse failed occasionally, and the veins of the neck became very turgid. During the 40 hours there were many attacks of dyspnoea, one or two of which were very severe; in the intervals the breathing was quiet, and the patient's colour was good. Finally, the pulse failed, and

¹ A paper read before the Section of Medicine of the Royal Society of Medicine on Nov. 28th, 1916.

² Proc. Roy. Soc. Med., vol. vii., Clinical Section, May 8th, 1914, p. 147.

³ Proc. Roy. Soc. Med., Clinical Section, Jan., 1915, p. 22.

death from exhaustion ensued. The vomiting seemed to be a true vomiting, and not a mere regurgitation of food, and took place some time after taking food. On one occasion only had it been noticed that food taken several hours before was returned unaltered. Nothing abnormal was found in the larynx on repeated examination. Vomiting was usually brought on by an attack of coughing.

Post-mortem examination.—The lungs appeared emphysematous. The right lung was adherent by old adhesions at the apex, the lower part showed recent adhesions, and there was a small pleural effusion at the right base; there were patches of broncho-pneumonia in the lower lobe. The left lung was congested in the lower lobe. The heart was normal, but a soft cystic swelling bulged into the back of the pericardial space. On raising the right lung a sausage-shaped tumour was seen lying between the spinal column behind and the trachea and pericardium in front. It bulged into the right chest, and proved to be the oesophagus greatly dilated; it was filled with undigested food, and no stricture could be made out. The finger could be passed through the cardiac opening of the stomach into the oesophagus, and no resistance was met with in doing this. The trachea showed no constriction, but a submucous extravasation of blood was seen on the posterior surface near the bifurcation; the cartilages appeared to be a little softened, as though from pressure. The brain, heart, kidneys, and liver were normal.

Report on the oesophagus by Mr. T. W. P. LAWRENCE.—An oesophagus measuring 24 cm. in length, with the cardiac end of the stomach. At the upper end the internal circumference measures 4.5 cm., at the cardia 5 cm. Between these points, involving the whole oesophagus, there is a fusiform dilatation, which reaches its maximum width at about an inch below the middle, where the internal circumference is 13 cm. The wall of the tube is slightly increased in thickness at the lower end (about 4 mm.) and becomes gradually somewhat thinner towards the upper part. In the main part of the dilatation the rugæ are smoothed out, but are still present at the upper and lower portions of the tube, and in the latter situation the mucous membrane is swollen or altered in appearance so as to resemble somewhat the mammillated mucous membrane of chronic gastritis, and in many places it shows with a lens a finely papillary surface. The epithelium in the most dilated part of the tube is irregularly thickened, and in places destroyed, leaving small areas of ulceration in which the muscular coat is laid bare. No ulcers or cicatrices are present in the lower part of the oesophagus or cardiac end of the stomach. The submucosa appears to be everywhere loose and free from induration. At the lower end of the specimen on its external aspect there is a small group of slightly enlarged lymphatic glands, one of which contains caseous foci; these are connected with the stomach rather than with the oesophagus, though at one spot they slightly overlap the extreme lower end of the latter.

Microscopical examination.—(a) Chronic catarrhal inflammation. This is most marked at the lower part of the oesophagus. The epithelium is thickened, shows a tendency to surface desquamation and the papillæ are increased in size, forming bead-like projections above the general surface. There is some induration of the areolar layer between the epithelium and muscularis mucosæ, with leucocytic exudation. The submucous tissue and the areolar tissue between the circular and longitudinal muscle layers are also in places slightly indurated. In the smooth area of the more dilated part of the oesophagus these changes are less marked, and the papillary hypertrophy is absent. (b) Muscular hypertrophy.—Judging from the thickness of the circular muscle-fibres, this layer appears to be slightly hypertrophied in the lower half of the oesophagus. (c) Muscular atrophy.—Many of the bundles in the circular layer of muscle-fibres are very slender and obviously atrophic. This condition is fairly uniform in the more dilated part of the tube, but only occurs in localised patches at the other end. (d) Definite staining for fat with Scharlach R. and Sudan III. is not obtainable.

CASE 2.—The patient, aged 55, was admitted to University College Hospital on May 21st, 1914. He complained of the following symptoms: (a) general weakness for a month, much worse one week; (b) difficulty in keeping his food down, particularly solid food, on and off for 18 years—it had become much worse in the last six weeks, when his food had to be returned immediately after taking it; (c) pain in the chest on and off, not related to the actual taking of food, most marked during the preceding month, and much worse the last week; and (d) during the last two weeks he had developed shortness of breath and cough. His symptoms began 18 years previously, when after having had dinner he had a fit of coughing and fell down unconscious. He recovered and felt quite well, but three days later he found he could not swallow properly. He went to Guy's Hospital and was under the care of Mr. Charters Symonds. Thence he was sent to St. Bartholomew's Hospital, and remembered that he was "fed with a tube." He had had pneumonia at the age of 17, typhoid

fever at the age of 23, and influenza and bronchitis at the age of 51. There was no history of syphilitic infection, nor was there any history of a similar sort of "dyspepsia" in his family. He was moderate in the consumption of alcohol and in the use of tobacco.

Physical examination.—On admission he was found to be wasted, was rather short of breath, had some pain in the upper abdomen which was bad enough to disturb his sleep very much, and he had some cough and brought up grey expectoration. He was tender in the upper part of the abdomen, to the left of the middle line. There were no abnormal physical signs in the heart; the blood pressure registered 94 to 116 mm., the pulse was regular, 100 to a minute, and the temperature was 99° F. The lungs were emphysematous and rhonchi were heard on both sides.

X-ray examination by Mr. R. Higham Cooper (May 25th, 1914).—A bismuth emulsion appeared to pass straight into the stomach and there was no sign of an oesophageal pouch. The plate, however, showed a considerable increase in width of the shadow usually seen at the base of the heart.

An oesophageal bougie the size of the little finger was passed by Mr. Herbert Tilley without any difficulty, and apparently into the stomach, and the patient said he had felt "relieved by this, as if something had been pushed on." A rather small-bore oesophageal tube was then passed for 21 inches. This caused immediate discomfort and retching, and when withdrawn a piece of carrot, eaten 24 hours before and practically unaltered, was found in the eye of the tube. Oesophagoscopy showed a dilated oesophagus the walls of which were folded, presenting depressions and crevices which caused confusion when an attempt was made to pass a bougie through the oesophagoscope into the stomach. The attempt to do this failed entirely. Analysis of the vomited matter showed no free hydrochloric acid, but some lactic acid. The total acidity was 0.073 gramme HCl per cent.; the proteid HCl was 0.036 gramme per cent.; and the lactic acid 0.045 gramme per cent. There was a trace of albumose present, and there was only a small amount of digestive power (Dr. F. H. Teale). The vomit varied in amount from 1 ounce to as much as 38 ounces. Attempts were made by liquid dietary and rectal feeding to maintain the patient's strength, but he wasted rapidly and died on June 1st, 1914, in an attack of angina pectoris.

At the post-mortem examination the patient was found to have a dilated oesophagus and calcification of the coronary arteries; beyond this no other abnormality was found.

Report by Mr. LAWRENCE.—An oesophagus measuring 28 cm. in length, with the cardiac end of the stomach and the bifurcation of the trachea. From above down the oesophagus presents the following peculiarities: (a) For 6 cm., as far down as the bifurcation of the trachea, a slight cylindrical dilatation and marked hypertrophy; (b) for 17 cm. below the bifurcation a large fusiform dilatation with a maximum internal circumference of 16 cm. at a little below its middle; marked hypertrophy of the walls in the upper third of this part, with a maximum thickness of 6 mm. at its highest part, the wall gradually thinning to 2 mm. somewhat below the middle and again increasing at the lower end of the dilatation; (c) for 4 cm. below the fusiform dilatation a slight cylindrical dilatation, with marked hypertrophy (7 mm.); (d) the lowest 1.5 c.c. of the tube normal. The rugæ are smoothed out in the more dilated portion, and the mucous membrane shows patchy thickenings of the epithelium, which in places has become detached, leaving shallow circular and irregular ulcers. There are no ulcers or cicatrices in the lower part of the oesophagus or cardiac end of the stomach. No enlarged glands, induration, or other changes are present round the lower extremity of the oesophagus.

Microscopical examination.—(a) Chronic catarrhal inflammation. The epithelial layer is narrow generally, owing apparently to desquamation; in the most dilated portion the epithelium is absent in places. Between the rugæ at the lower end the papillæ are hypertrophied, forming small projections on the surface. The areolar tissue between the muscularis mucosæ and epithelium and the adjacent part of the mucous layer is infiltrated with leucocytes and is slightly indurated. In the lower part of the oesophagus there is some fibrosis of the layer of longitudinal muscle and of the areolar tissue between the two muscle layers. (b) There is marked hypertrophy of both muscle layers, except at the most dilated part of the oesophagus. (c) There is marked atrophy of the bundles of circular fibres in the region of greater dilatation.

The following deductions have been made by Mr. Lawrence on these two specimens. 1. That the inflammatory changes are simply due to irritation by retained food. 2. That the hypertrophy, even when it extends to the upper part of the tube, must be due to obstruction at or near the lower end. 3. That the atrophy is due to stretching of the walls owing to dilatation by food retention, and that it may be preceded by hypertrophy. 4. That in Dr. Martin's case there never was much hypertrophy, and that therefore hypertrophy is quite a secondary process in these cases; in fact, all the changes seem to be secondary.

CASE 3.—The patient, aged 50, had been anæmic as a young woman, and liable to faint. At the age of 30 years she hurt herself by swallowing a rather large fish-bone. She first noticed a trace of dyspepsia at the age of 33, when she began to observe that swallowing effervescent drinks like ginger-beer caused her great discomfort in the chest. Eleven years ago a definite pain developed behind the sternum, which was relieved by oring up wind. Cold food, solid or liquid, always caused the greatest degree of this pain. Solid foods generally "seemed to stick" at the epigastrium and caused her to return the food, or, at any rate, if she made herself sick she was much relieved of the pain; butter and fat foods also seemed to increase this pain. The pain did not necessarily come on as the result of taking food; it was accompanied by a feeling of distension of the abdomen. During the night mouthfuls of food, not very acid, would be brought up, and sometimes be expelled through the nostrils. It was about this time that she first noticed shortness of breath after taking solid food, and relief came only by bringing back her food. When seen by one of us at this stage naturally some form of obstruction was feared. She did not, however, seek further advice for 18 months, and then, as she was well nourished and her symptoms had not intensified, as she had kept to a liquid or very light diet, a tentative diagnosis of dyspepsia was made. Her teeth were put in order and a stomachic mixture containing bismuth was prescribed; this latter apparently relieved the slight symptoms that persisted despite the light character of her diet. In the course of time she got tired of the diet, which consisted of milk, custards, bread-and-milk, and scrambled eggs, and came under the care of Dr. J. C. Williams, who was struck with the persistence of the symptom that food apparently "stuck in the chest," and suggested the use of a bismuth meal and X ray examination. This was carried out by Mr. Higram Cooper on Sept. 30th, 1914. He found that "On examination immediately after the meal no shadow of the stomach could be made out. All the bismuth meal appeared to be in the oesophagus, which showed enormous general dilatation, with a small process below and to the left evidently corresponding to the cardia. Half-an-hour after the meal small portions of opaque matter were seen ejected from the oesophagus at the end of each forced inspiration. One and a half hours after the meal was taken there was a mass with rounded lower border, visible below and to the left of the umbilicus, evidently representing the greater curvature of the stomach. Above this was a long spindle-shaped mass in the position occupied by the ejected particles mentioned in the previous examination. Four and a half hours after the meal was taken the shadows in the stomach had disappeared, but that in the oesophagus was practically unchanged. Further examination could not be made, as the patient became sick and faint. The condition appeared to be one of almost complete obstruction of the cardia with consequent dilatation of the oesophagus. On pressure being applied to the oesophagus by inspiratory movement, the fluid parts of the meal seemed to be squeezed through the cardiac orifice."

This patient is alive still, is very well nourished, and so long as she adheres to a dietary such as has been indicated above, she is free from all but the slightest symptoms. Owing to the absence of Mr. Cooper in France we are unable to reproduce his pictures, and Dr. Stanley Melville has radiographed her again, and reports as follows:—

Opaque porridge passed without difficulty as far as the lower end of the oesophagus. At this point further quantities of the meal were seen to collect above the constriction, the oesophagus dilating to accommodate the food. There was some tendency for the food to regurgitate, and what appeared to be reverse peristaltic waves were noted in the oesophagus. The appearance of the oesophagus at the conclusion of the meal bore the customary shape of cardio-spasm, the sharp "sickle-shaped" outline to the right of the cardiac shadow being well marked. In this case the usual thin line of food as it slowly passed the obstruction was not very evident, but small quantities of the meal were seen at intervals to enter the stomach.

CASE 4.—The patient, aged 24, came under the care of Dr. J. A. Belcher at the beginning of this year for cough and hæmoptysis, which he found were due to pulmonary tuberculosis. She had also noticed for the previous three years that when she took solid food it appeared to stick in her chest behind the breast-bone, and on occasions the food would come up apparently little altered. Liquid food did not cause any trouble. Sometimes the food brought up had been taken a day or so before. She had lost nearly 2 st. in weight in three years, and was short of breath, two symptoms, however, as easily attributable to her lung condition as to that of the oesophagus. With careful dieting the regurgitation of food became much less frequent, and if she ate slowly and thoroughly masticated her food she could retain fish, chicken, and even meat, though this was not always the case. It was distinctly noticed that sometimes

she had a difficulty in retaining food, whereas at others on the same diet she had none. Dr. Stanley Melville carried out an X ray examination on March 17th, 1916, using a bismuth meal, and reports as follows: "The opaque meal, of the consistency of porridge, passed without delay or obstruction until the lower limit of the oesophagus was reached. At this point the food was arrested, further quantities of the meal accumulating at the expense of the oesophagus, which continued to dilate until a large mass, with a well-defined and characteristic curve to the right, was seen. This was distinguishable from the right border of the heart. After an interval of about ten minutes a thin, somewhat long, and sinuous streak was seen to be entering the stomach. There was very marked delay in the passage of the food into the stomach, and at the end of an hour only a portion of the meal had passed the constriction." On April 7th, 1916, the patient was again placed under X ray examination. Considerable improvement was observed in the transit of the bismuth meal, for at the end of 15 minutes the greater part of the bismuth had reached the stomach. Dr. Dundas Grant was able to carry out an oesophagoscopic examination, and to demonstrate the folds and recesses met with in the walls of what was evidently a dilated oesophagus.

The radiographic study of the two last cases was interesting in that, besides giving the true diagnosis, an interesting phenomenon was noticed when the patient took a deep breath. A pencil-like shadow of bismuth could be seen, indicating the narrow lower end of the oesophagus and the cardiac orifice of the stomach. This would remain unaltered for some time, and so far as a radioscopic examination was concerned no food was taken into the stomach, showing the obstruction was probably complete, even for such a weighty salt as the one of bismuth used. However, this obstruction could be overcome in both cases when the patient took a deep breath or coughed, for then a fainter shadow of the bismuth meal could be seen, indicating that some bismuth escaped on such occasions into the stomach. The obstruction was not absolute.

Through the courtesy of Dr. G. F. Darwall Smith and Dr. Arthur Latham we are able to publish the details of a case which came under the observation of one of us (A. W. W.) at the General Lying-in Hospital, York-road, S.E. The patient subsequently died at St. George's Hospital.

CASE 5.—The subject of this case, aged 33 years, the mother of three children, was admitted to hospital on Jan. 28th, 1915. She was 32 weeks pregnant. As she had frequent vomiting which could not be controlled, she was admitted as a case of "pernicious vomiting of pregnancy." The following points in the history of the case were elicited, part being obtained from the husband, because the patient herself had developed defective memory. It was found that she had never had any serious illness before, but that she had always to swallow slowly, and that the difficulty in getting the food down had for the last ten years been increased, so that even slow swallowing did not obviate it. During these ten years the food would occasionally be actually brought back, as if she had vomited it, and there was an accompanying sensation of nausea. This return of food, it was found on close inquiry, only followed immediately on the ingestion of food—that is to say, it did not occur during periods of fasting. In November, 1914, the patient had a very severe attack of coughing, which seemed to intensify the habit of bringing up her food after swallowing it, so much so that from this date until her admission to hospital it was a constant feature, and for four days before admission she had been quite unable to retain any food given by the mouth. The attack of coughing which began this phase of severe vomiting was not an isolated attack; she was liable to similar attacks, and even had had attacks of "asthma." When she swallowed food she noticed that it "seemed to stick" at a point referred to the lower end of the sternum.

The clinical study of this case belongs to the patient's stay under Dr. Darwall Smith's care at the General Lying-in Hospital and under Dr. Arthur Latham's care at St. George's Hospital. On admission to the former hospital she was found to have a distressed facial aspect, to be emaciated, was suffering from bronchitis, and was slightly deaf (the deafness having come on two days previously). The temperature was subnormal and the pulse-rate 120 per minute throughout her stay. No abnormality was found in the urine; the bowels were constipated. There were some scars on the right side of the neck, suggesting former glandular disease. Her nervous symptoms were such as to suggest neurasthenia. Various remedies were tried to check the vomiting, and the simplest of dietaries, consisting of albumin water or peptonised or citrated milk in small quantities, was adopted. Despite these efforts the food was rejected after being swallowed, very often being associated

with a bout of coughing or the bringing up of phlegm from the pharynx. Thinking over the case at the present date, it seems very possible that the very act of coughing or straining to bring up phlegm was responsible for the rejection of food, and also probable that the mere taking of the food provoked the cough.

On Feb. 6th, 1915—that is, nine days after admission—it was considered desirable that labour should be artificially induced, and this was carried out, the child being alive and weighing 7½ oz. The effect upon the vomiting was nil. The bronchitis rapidly got less under treatment with expectorants, &c. On the 22nd other symptoms were suddenly added. The deafness increased, the patient became dizzy, her memory was more impaired, and she became somewhat drowsy and delirious. Her sight began to fail, so that though she could appreciate light she was unable to recognise the faces of those about her. Ophthalmoscopic examination showed the presence of swelling of the discs and of retinal hæmorrhages. Nystagmus was present and marked. The knee-jerks could not be obtained. On the 25th an attempt was made to give relief by washing out the stomach. The stomach-tube passed in easily for a distance of 15 inches, measured from the incisor teeth, but it was impossible to pass it beyond that distance. The passage of the tube caused the patient to retch, and actually to eject food she had swallowed; the return of the food was not through the tube, but outside it, and escaped by the mouth and nostrils.

The patient's condition had become very grave, and it was considered desirable to transfer her to St. George's Hospital. This took place on Feb. 27th. When admitted she was not unconscious, but drowsy; she was wasted and pale, and had a little bronchitis; temperature 96° F., pulse 86, respiration 20. The pupils were found to be equal and they reacted to light; bilateral optic neuritis and flame-shaped retinal hæmorrhages were present. The knee-jerks were diminished and the calves were somewhat tender. A faint trace of albumin now appeared in the urine. The symptoms did not improve, and the patient died on Feb. 28th.

Post-mortem report by Dr. R. SALUSBURY TREVOR.—There were well-marked lordosis and old scars on the right side of the neck; the lungs were oedematous and collapsed at their bases; no indications of tuberculosis were seen, but there was much bronchitis. The heart weighed 6 oz., showing typical brown atrophy; the mitral valve was thickened, but competent; the aorta was small, but natural; there was no atheroma; small petechial hæmorrhages were found at the base of the right ventricle; the heart was not a "renal" heart. Nothing abnormal was found in the abdomen; the right kidney weighed 4 oz., and looked healthy, except for slight injection of the pelvic blood vessels; the left kidney weighed 2 oz.; it was much furrowed as if by old infarcts, but on section they had not that character, the cortex being normal in colour and plentiful.

Alimentary canal.—The only point of interest was the condition of the oesophagus, which showed fusiform dilatation from the cricoid cartilage to the cardia, suggesting a second stomach. The length was 10 inches, the maximum width 4½ inches; it contained about a pint of milk. The muscle was hypertrophied; the mucosa was ulcerated, small white epithelial islands being left in patches on an ulcerated surface. The stomach was small and catarrhal. The uterus was enlarged, and showed on the fundus and posterior walls a shaggy mass of placental tissue and clot; there was no endometritis. The brain showed no abnormality. Flame-shaped hæmorrhages and optic neuritis were demonstrated in the right fundus (confirmed microscopically). There was well-marked lordosis of the spine. The right vagus was dissected out and appeared to be normal.

Microscopical examination.—This showed marked inflammation of the epithelial lining of the oesophagus, and there was small-celled infiltration between the muscle fibres. The circular muscular coat was much fibrosed, and in portions of the oesophageal wall which corresponded to dark rings, seen by naked eye on the mucosa, the blood-vessels were greatly dilated, even producing an angiomatic appearance. The furrows noticed in the left kidney corresponded to areas of fibrosis which appeared to originate around the blood vessels.

CASE 6.—The patient, aged 51 years, was admitted to University College Hospital on May 29th, 1916, for pain after taking food, vomiting, and wasting. She had been quite well up to four years before admission, when she began to have attacks of chest pain and vomiting. The attacks when severe lasted about two weeks, but at the beginning each attack was followed by an interval of about two months, during which the patient was quite well. Gradually the attacks became much more frequent, and for the last five months the interval between the attacks was only about three weeks. The pain was felt behind the middle of the chest and in the upper part of the stomach; it was dull in character and came on about 20 minutes after a meal, particularly, but not exclusively, if the meal was a solid one. In another ten minutes vomiting would occur and then the

pain was relieved: the site of the pain was constant and it did not radiate in any direction. Vomiting was a constant sequel to the pain; the vomited matter varied in quantity, in severe attacks amounting to over one pint; the vomiting was easy and the vomited matter was free from blood. There was no flatulence. No history of any antecedent illness was obtained.

On admission the patient was found to be wasted (5 st. 8 lb. 11 oz.) and anæmic. She was somewhat tender on pressure in the epigastrium and the right rectus was somewhat rigid; on distending the stomach with carbon dioxide, it was found to be dropped, the lower margin reaching well below the umbilicus. She was given a fish diet on admission and seemed to be able to swallow it comfortably. Examination of the blood showed secondary anæmia. The examination of a test meal obtained on June 1st showed no free hydrochloric acid, although the total acidity was 0.219 gramme HCl per cent., consisting of protein hydrochloric acid 0.1095 per cent. and of lactic acid. Albumose was present and the digestive power was 30 per cent. (Dr. F. H. Teale). During her stay in the ward the patient had irregular fever, the temperature reaching on occasions as much as 102° F. Gradually pain and vomiting recurred, pulse and respiration ratio increased, and death took place on June 30th. A radio-scopic study of a bismuth meal had been made, but, so far as could be seen, there was nothing pointing to delay in the passage of food along the stomach or intestine.

Report by Mr. LAWRENCE.—The oesophagus is 23.5 cm. in length. Its upper and cardiac orifices are of normal size; between these the tube is dilated throughout, its internal measurements being: At 2 c.c. below cricoid, 6 cm. circumference, at 5 c.c. 8 cm., at 11 c.c. 7.5 cm., and at 17 c.c. 13.5 cm. Longitudinal rugæ are generally absent from the mucous membrane, except at the upper parts; in the middle third there are scattered superficial erosions of small size; in the lower third the mucous membrane is thickened and opaque and the sub-mucous tissue indurated. At the lower end, just above the cardia, is an oval ulcer about an inch in length which has part of its edge thickened, indurated, and overhanging. The muscle of the upper half of the oesophagus is not appreciably hypertrophied; in the lower half it is distinctly but slightly hypertrophied, except at and for a short distance above the cardiac orifice, where it is normal. The lower tracheal and bronchial glands are much enlarged and caseous, and are adherent to the oesophagus in places. Just above the level of the aorta a softened gland has perforated the oesophagus by an aperture measuring 2 mm., and lower down, at about the middle of the oesophagus, is a larger ulcerated aperture (about 1 cm. in diameter).

Remarks

1. It certainly looks as if this condition is not so very rare.
2. The symptomatology is very variable. Dr. Martin's patient (Case 1) died comatose, and had symptoms of dyspnoea which to a certain extent simulated asthma. The second patient (Case 2) also had shortness of breath, and, at any rate, at the beginning of his illness he had lost consciousness. Our third and fourth cases had some similitudes to cases of dyspepsia, one to ordinary acid flatulent dyspepsia, and the other to the dyspepsia of pulmonary tuberculosis. The fifth case simulated the toxic vomiting of pregnancy and also had a history of attacks of cough and of asthma; the sixth case simulated carcinoma of the stomach.

3. *Causation.*—Such cases in the past have been frequently referred to as examples of cardiospasm, by which is meant that quite independent of any organic lesion spasm occurs in the circular muscular fibres round the cardiac orifice of the stomach (cardiospasm). The obstruction caused by this phenomenon leads to a dilatation of the oesophagus and to a variable amount of hypertrophy of the muscle of the tube, food being retained in the oesophagus, irritating its walls, leading to chronic inflammation, and assisting in bringing about dilatation. This might be looked upon as a sort of *positive* cardiospasm, but unfortunately there is no proof histologically that there is hypertrophy of the muscles of the cardia such as might be expected if spasm had occurred. Dr. H. D. Rolleston⁴ has advanced the view that possibly the action of the longitudinal fibres is at fault in that they do not help to dilate the cardia at the moment when the oesophagus is ready to propel food into the stomach, so that the circular fibres remain unopposed in action, producing, as it were, a *negative* cardiospasm. This view has been adopted very largely by Dr. Hurst, and he has introduced the term "achalasia of the cardia" to describe these cases, by which he means that

⁴ Trans. Path. Soc., 1896, xlvii., 37.

when the peristaltic wave passing along the œsophagus reaches the cardia the relaxation which should occur then does not take place. He does not, however, commit himself to any explanation why this relaxation does not take place other than the one suggested by Dr. Rolleston, who, as we have seen, postulates faulty action of the longitudinal muscular fibres. Dr. F. Parkes Weber has put forward the ingenious suggestion that the neuro-muscular incoördination causing the faulty action of the longitudinal muscular fibres is akin to heart-block, and if this were the case it is easy to see that the block might not only be due to structural changes in the longitudinal muscle fibres, but to functional ones which would not reveal histological change. Accepting Dr. Rolleston's view, it is easy to see that we need not necessarily in each case find that the post-mortem evidence of muscular hypertrophy is identical. Dr. Hurst asserts that in none of these cases is hypertrophy of the cardiac sphincter observed after death; but hypertrophy of the œsophagus as a whole was met with in our third case except at the most dilated part, Mr. Lawrence finding hypertrophy in both muscle layers, and hypertrophy was seen in the fifth case by Dr. Salusbury Trevor. In our first case Mr. Lawrence found slight hypertrophy of the circular muscular fibres in the lower half of the œsophagus. From these facts and from accounts given by others it is clear that in some cases hypertrophy is the rule; in others atrophy is the more marked feature, whereas in others again there is hypertrophy of one part of the muscle layer and atrophy of another. So far as a consideration of the literature shows, the œsophagus in these cases in no way simulates the condition of the stomach wall in the condition met with in hypertrophy of the pylorus in children, where *all* the muscular coat of the stomach is hypertrophied, and that near the pylorus especially.

A second theory may be advanced for the explanation of this condition. The researches of Braune and of von Goubaroff have shown that a valvular mechanism may exist at the cardia owing to the fact that when the œsophagus pierces the diaphragm it turns somewhat abruptly to the left side to open into the stomach, and it is probable that when the stomach is distended this bend is increased to such an extent as to obstruct the return of the contents of the stomach into the œsophagus. Obviously in such a condition there may be an obstruction to the passage of food from the œsophagus into the stomach. We think that this would provide an explanation for the occurrence of these cases, and we think that after childhood and early youth have passed this valvular obstruction may begin to be operative to the extent of producing symptoms for the first time in the individual's life. This is in harmony with the well-known clinical fact that visceroptosis does not, as a rule, produce symptoms until early adult life is reached. In every one of the cases which we have recorded the symptoms were absent in childhood and youth, and first were noticed at the ages of 33, 37, 33, 21, 23, and 47 years of age. Another fact which supports this theory is that occasionally during life the obstruction at the cardia *disappears*, the bismuth meal at one time meeting with obstruction, and at another time apparently passing on without any delay. This would explain why Mr. Higham Cooper found in Case 2 that the bismuth meal passed straight into the stomach, and yet at the post-mortem examination the classical condition of œsophagectasia was present. Further, in Case 4 Dr. Stanley Melville was able to prove by bismuth meals that there was obstruction on March 17th of this year, and that on April 7th it had quite passed away. The disappearance of the obstruction in this case is also confirmed by the fact that the patient can at the present time swallow solid food without difficulty, and has no symptoms whatever, although, as we have seen, she has persistent œsophagectasia. We feel, therefore, that there is a good deal to be said for this mechanical kinking at the cardia as an explanation of the development of the dilatation of the œsophagus in these cases—a theory which does away with the need to postulate "spasm" of circular or longitudinal muscular fibres for which it is impossible to find an explanation.

4. A few words remain to be said with regard to the symptomatology and other features of these cases.

(a) They must not be confused with cases of hysterical spasm of the œsophagus, in which neither food nor bougie can be passed. Hysterical manifestations were remarkable by their absence in our cases. It will be noted that five out of the six patients were women.

(b) That death may occur directly or indirectly about the age of 30, as in two of these cases, or may be postponed to later life, when death may occur from some quite independent cause—angina pectoris in our second case at the age of 55, and at a still more advanced age from pneumonia in Sir Samuel Wilks's case.⁵

(c) The outstanding features which should attract the physician's attention to these cases are as follow. When food does not seem to pass down the œsophagus properly it "sticks" behind the breast-bone, and may even cause pain in the epigastrium; further, this "sticking" of food has been noticed frequently for a few or many years. Relief is got by making the food come back, the patient securing this by tickling the fauces, attempting the act of vomiting, or by coughing, or by taking a deep breath. It will be found that the taking of a meal is followed by a feeling of difficulty of breathing, actually described by some patients as a feeling of stifling or of asthma, which is only relieved by again bringing up the food. In some cases a condition of persistent cough is provoked by taking a meal, as if the dilatation of the œsophagus irritated the lung and caused a reflex cough, the combination of cough with attacks of respiratory embarrassment provoking in these cases the opinion that the patient is suffering from true bronchial asthma. When studying the transit of a bismuth meal by means of X rays in cases of so-called "dyspepsia" it is very necessary to observe the shadow in the œsophagus as well as in the stomach and intestine; two at least of the above cases were missed from want of this precaution. These patients soon learn that the best way to obviate symptoms is to masticate very thoroughly and to spend some extra time over their meals, avoiding all "bolting." If this plan fails they generally betake themselves to liquid diet, which they can deal with comfortably.

(d) We are entirely at a loss to explain why Dr. Martin's patient died unconscious, having been in that condition for something like 40 hours; possibly it was due to acidosis. That it was not an exceptional feature is shown by the fact that our second patient lost consciousness at the onset of the malady, and our third patient was when a young woman liable to faint; this may, however, have been simply due to "anæmia," from which she suffered as a girl, for she has not had such a symptom during recent years. Our fifth patient also showed loss of consciousness, but there were other possible causes for it besides acidosis; there can be little doubt that her death was really due either to the toxic condition which produces pernicious vomiting in pregnancy, or it was due to uræmia, or to both.

(e) In conclusion we would call attention to the extreme case, in the absence of a careful history, of confusing these cases with dyspepsia, and even with bronchitis and asthma, for in none of them, except the fourth one, did the patient volunteer the information which led us to suspect the condition which we have described.

We do not feel any hesitation in using the term "œsophagectasia" for these cases. The name describes what is an obvious fact, and does not commit us to any of the various theories which have been advanced and, as yet, not proved.

⁵ Trans. Path. Soc., xvii., 138.

AN ACTION FOR MEDICAL FEES.—An action brought in the High Court and remitted to the county court at Newcastle was recently decided, in which Mr. S. Basham sued for the sum of £99 12s. for professional services rendered to a brigade of the Northumberland Fusiliers. The case for the plaintiff was that he undertook to attend the men who were being enlisted at the rate of 6s. per day per company of about 250 men. Later on, owing to developments by which the battalions raised by the defendant committee were transferred elsewhere for training, Mr. Basham found himself attending at a dépôt to which men were sent who could not stand the rigors of training. Consequently he had under his care about 600 men, a very large proportion of whom were in need of professional attendance. In these circumstances it was arranged that he should be paid in advance of the rate originally arranged—that is to say, at 24s. per day for the number then at the dépôt. It was suggested in defence of the action that while the medical man was asking for payment at the arranged rate, which was not disputed, the duty to contest the claim arose as payments of sums over £5 had to be sanctioned by a higher authority which had not been consulted. The judge found that there was no reason for going behind the arrangement, and gave judgment for the plaintiff.

THE PROBLEM OF THE TUBERCULOUS SOLDIER.

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THE discharge from the Army of many men suffering from tuberculosis makes it necessary, and even urgent, to consider the best means of dealing with them having regard to the man himself, his dependents, and the public health. At present the method is as follows. The man reports sick and is sent to a military hospital for the purpose of diagnosis and preliminary treatment. As soon as possible after the confirmation of the diagnosis he is discharged from the Army, although the exigencies of the service or of his case may have necessitated his spending some weeks in one or several military hospitals. Sufficient accommodation in civil tuberculosis institutions has been provided for the discharged soldier by the Insurance Commissioners, and the men are encouraged to apply for admission to such an institution immediately on discharge. As a fact, application is made before the actual discharge, so that the man may proceed direct without any interval from the military to the civil institution. Theoretically this would seem to be an entirely satisfactory method. In practice there are many difficulties.

I have been for the past year in charge of a civil hospital provided exclusively for soldiers and sailors suffering from tuberculosis. Nearly 300 men have been admitted in the course of the year, the vast majority of whom have been soldiers discharged from the Army and admitted to this institution by arrangement with the Insurance Commissioners and the Army authorities.

The problem of dealing with the tuberculous soldier is complicated by two main factors which are not present in the case of the soldier disabled, for example, by wounds:—

1. The lesion is in many cases progressive: the man's state of health, and therefore his earning capacity, does not remain at any fairly constant level as would be the case with a soldier incapacitated by an amputated limb. The economic value of the discharged tuberculous soldier—practically never that of a sound man engaged in the same occupation—tends in probably the majority of instances to become progressively less rather than greater. In the case of a maimed man surgical aid, training, and time are all allies in restoring at any rate a part of his previous economic value. His physical health and his skill at the new occupation tend to improve up to a certain maximum, and there is no reason why they should not remain stable for perhaps many years.

2. There exists in the case of a tuberculous soldier the factor of infection. This factor has not to be considered in the case of men discharged for other lesions, with the possible exception of venereal disease.

These two factors make the problem of dealing satisfactorily with the discharged tuberculous soldier a very difficult one. They are factors, of course, which are common to many cases of tuberculosis occurring in the industrial classes in civil life.

A short time ago I made a careful analysis of the cases admitted during the first six months that Beechwood Tuberculosis Hospital, Newport, Mon., was open. Dealing only with the soldiers admitted during that period there were 123 admissions. Of the total 123 cases, 109, or 88.61 per cent., were found to be suffering from pulmonary tuberculosis; 5, or 4.06 per cent., were very doubtful cases of pulmonary tuberculosis and are not considered as such; 4, or 3.27 per cent., were cases of non-pulmonary tuberculosis; and 5, or 4.06 per cent., were suffering from diseases other than tuberculosis. Of the 109 cases of pulmonary tuberculosis, 77, or 70.62 per cent., were absolutely definite—i.e., T.B. in sputum; and 32, or 29.38 per cent., were clinically definite, but T.B. not found in sputum.

By taking the past civil and military history and clinical condition on admission into careful consideration an attempt has been made to ascertain what proportion of the men were probably affected with tuberculosis at the time of their enlistment. Certain of the cases (14 in fact) were old patients of the Memorial Association from various areas of Wales. Others gave a history of chronic ill-health, cough,

hæmoptysis, or pleurisy existing before the outbreak of war; others again were discharged in periods of a fortnight upwards after enlistment and presented lesions which were incompatible with their occurrence between enlistment and discharge.

There are, of course, many cases in which it is impossible to form an opinion from the available data as to the length of time since the onset of the disease. Nothing much better than a guess can be made as to whether the disease was "present" or "absent" at the date of enlistment. Such doubtful cases have been subdivided into two groups in the following table (Group III.) :—

| | |
|---|------|
| Group I.—Cases in which there was probably no evidence of tuberculosis at the time of enlistment or mobilisation | 39 |
| Group II.—Cases in which there probably or certainly was evidence of tuberculosis at the time of enlistment or mobilisation | 51 |
| Group III.—Cases upon which an opinion could not be formed: | |
| (a) Evidence on the whole pointing to absence of disease at time of enlistment | 10 |
| (b) Evidence on the whole pointing to presence of disease at time of enlistment | 9—19 |

109

(These numbers do not include the four cases of non-pulmonary tuberculosis and the five cases of "other disease," or the five very doubtful cases of pulmonary tuberculosis.)

If the 19 cases of Group III. are all given the benefit of the doubt and added to Group I.—i.e., all considered as cases presenting no evidence of disease at the time of enlistment—it will be seen that 58 cases fall in Group I.—i.e., 53.2 per cent. (of 109)—and that the remaining 51 cases of Group II. form 46.8 per cent. of the total (109). This latter figure is, in my opinion, too low, but, as will be seen above, every care has been taken to form as conservative an estimate as possible.

It is no business of mine to attempt any explanation of these figures. Three factors, however, readily suggest themselves to account to some extent for Group II. (It has to be remembered that a large number of the cases were voluntary recruits.) 1. The difficulties under which medical examinations of recruits had to be carried on in the first few months of the war. 2. Concealment on the part of the eager recruit of his past medical history. 3. Lack of coöperation with the tuberculosis officers in the early days of the war. Coöperation between the Medical Recruiting Boards and the tuberculosis officers is now very close, and must have the effect of preventing numbers of tuberculous men from entering the Army.

It will be noted that the percentage of open cases—that is, with tubercle bacilli in the sputum—admitted to the hospital, as shown by the analysis of the first six months' working, was very high—namely, 70 per cent. This percentage has been maintained or slightly exceeded in the succeeding six months.

Practically all the men admitted to this hospital are already discharged from the Army or their discharge is pending. They are therefore, strictly speaking, civilians, and this fact—namely, that they are civilians—gives rise to many difficulties, and is likely, in my opinion, to give rise to many more in the near future. The men are suddenly released from rigid military discipline. Those who have been to the front have been inured to the sight of appalling wounds and to the occurrence of various acute forms of illness. As their medical histories show, they have been accustomed to make light of such a commonplace as a severe cold or a chronic cough and have carried on until bowled over by a hæmoptysis or pleurisy or by the toxæmia of tuberculosis. The majority regard tuberculosis as something of comparatively little importance, and they are not disposed in many cases to submit to institutional discipline a moment longer than is absolutely necessary. Many men have been away from home for some months: they may also, owing to military exigencies, have been in several military hospitals before reaching the civil institution. In short, they have become impatient of restraint and anxious to return home under any conditions. This applies to a large number of cases both of single and married men. With the latter there is frequently an added reason for impatience—namely, the economic one. Men quite unfit to attempt it have been found to leave hospital in order to obtain

work to supplement the amount available for the maintenance of wife and family. Especially if the case is an "open" one the consequences may be serious: serious to the man himself who risks a breakdown which may be fatal; serious to his dependents who with inadequate house-room and inadequate food, will almost certainly become infected. The representative figures already given show that the effect of Army service upon the tuberculous subject is in many instances to cause a breakdown of the existing stable condition, and in many other instances to cause the lighting-up of a latent focus.

From the standpoint of public health the effect of discharging these men from the Army with the option of applying for sanatorium benefit may be to release an unknown number of centres of infection and to plant these all over the country under frequently inadequate housing and financial conditions. It is perfectly optional for a man as a civilian to accept or refuse the accommodation provided by the Commissioners. For the reasons given many of them refuse to avail themselves of the facilities, or only avail themselves of them to a very limited extent—they want to get home again. Most men recently discharged from the Army, where everything has been found for them, are quite incapable of appreciating the enormous rise in the cost of living. They do not grasp the fact that the purchasing power of a pound is not much more than half what it was before the war. With a small pension—and this for a limited time—plus the few shillings (10s. per week is the maximum) they derive from the State Insurance, they go quite cheerfully from hospital or sanatorium to their homes and endeavour to maintain themselves and their dependents. The result is, not uncommonly, a complete breakdown and a return to the institution. The single man or widower without dependents, even if his working capacity is only very slight, is for a time, at any rate, fairly well off on his discharge from the Army. He has his pension (temporary and subject to revision), plus his State Insurance Benefit, available for his own maintenance. Many single men have, however, one or both parents to support, and then their economic position approximates to that of the married man with dependents.

In estimating the economic position of the discharged tuberculous soldier it is convenient to consider three stages in his career.

1. The stage before he joined up, that is, his ordinary earnings as a civilian; and presumably—since he was passed into the Army as such—a healthy man.

2. The stage of his Army service, which may have been anything from a few days upwards. This stage naturally divides itself into two periods: (a) period of ordinary military life, that is, training or actual service at the front (the man's resources at this stage would be Army pay, plus keep, plus separation allowance); (b) period immediately succeeding the breakdown when the man is a patient but still under military control, that is, in a military hospital. His resources are now pay, plus keep, plus separation allowance, minus 7d. per diem.

3. The stage after his discharge from the Army—the return to civil status as an invalid. If he has done a certain minimum of military service he will at this stage probably be awarded a temporary pension of varying amount and for a varying period. In addition, if an insured person he will be eligible for the State sickness benefit maximum 10s. per week. If the man is in a civil hospital and has no dependents he will not receive this benefit; if he has dependents the weekly amount will be made over to them. Out of hospital, with or without dependents, if quite incapable of work he will receive this State benefit. So that in this third stage the man's resources will be as follows: (a) Man with dependents in a civil institution—pension plus State Insurance (made over to dependents) plus maintenance and treatment in hospital or sanatorium for tuberculosis. (b) Man without dependents in a civil institution—the same as above, but no State Insurance benefit is payable. (c) The man with or without dependents who is incapacitated by his disease and who returns home (as it is quite open to him to do)—pension plus State Insurance plus free treatment by a panel doctor.

It should be again noted that the pension is subject to revision, and that if the man remains incapacitated beyond a certain time the State Insurance money is halved, that is, it drops to 5s. a week. Further, that in any case in order to receive the State Insurance money the man must remain

quite incapacitated for work. Even an attempt at part-time work will result automatically in the withdrawal of this sum. (There appear to be certain difficulties in the way of Approved Societies granting partial benefits when the man is able to do part-time work.)

From every point of view it would seem to be desirable not to discharge from the Army the soldier suffering from tuberculosis until after an adequate course of treatment in hospital or sanatorium under military control. The case that is going downhill should be retained until the end. The patients in whom it has been found possible to "arrest" the disease should preferably be discharged, not directly to their homes but to undergo training in agricultural or horticultural work in farm colonies established for the purpose. The men would thus be trained to earn a living at that most difficult of things to come by for the "arrested" tuberculosis case—a suitable employment.

There are difficulties of course. The immediate cost to the State would be greater, but in the long run it would prove to be true economy. From the point of view of the men themselves the following are the advantages: 1. No anxiety about financial position of dependents, and therefore no incentive to seek work too early. 2. Being under military control the man would have no option but to continue his course of treatment as long as desirable (with great benefit to the man himself). 3. If farm colonies could be started for the men with arrested disease they would be provided with a means of earning a livelihood under suitable conditions on leaving the colony with the "cure" established.

The gain to the public health by preventing tuberculous soldiers from scattering broadcast to their homes and acting as potential fresh centres of infection is obvious. Retention in the Army is an easy means of securing what is so much needed in civil tuberculosis work—viz., powers of segregation of the infective case. It should be clearly stated that sufficient accommodation is now provided through the Insurance Commissioners and that this accommodation is available for the soldier immediately on his discharge from the Army. The points that this paper seeks to make are: (1) that this accommodation would be of much greater value and that the man himself and his dependents would be much better off if discharge from the Army were deferred; (2) also that sanatorium treatment should be followed by a further period of some months on a farm colony. Possibly after that many could be helped to take up small holdings and so remain "on the land."

A NOTE ON THREE CASES OF ACUTE MYELOID LEUKÆMIA.

BY ATHOLE ROSS, M.D. CANTAB., M.R.C.P. LOND.,
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SHADWELL.

BETWEEN June 29th and August 16th, 1916, three cases of acute myeloid leukaemia have been admitted to the East London Hospital for Children, Shadwell. This may be merely a coincidence, but it is possible also that there has been some increase of late in the disease and these cases are now published in the hope of ascertaining whether there is any ground for the latter assumption.

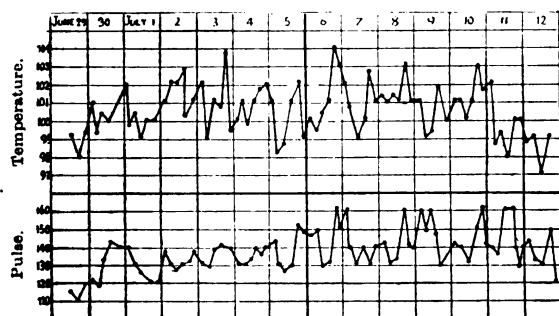
CASE 1.—Male, aged 6, admitted on June 29th, under the care of Dr. Clive Riviere; died on July 13th. (Chart 1.) History: Had been attending in the out-patient department for three months for a dirty mouth, when it was discovered that the spleen and liver were enlarged, which led to a blood examination. State: Anæmia with dirty sallow yellow colour; no hemorrhages. Gums very pale, spongy here and there; no teeth bad. Enlarged, shotty, discrete glands on both sides of neck. Hæmic murmur over base of heart and a very distinct venous hum. Spleen and liver enlarged. No retinal or subcutaneous hemorrhages. July 5th: A few slight hemorrhages on both feet. July 7th: A flame-shaped hemorrhage present on the right optic disc close to inferior nasal branch of retinal artery. July 9th: Epistaxis last evening. July 12th: Epistaxis and vomiting. Some hemorrhages over both upper and lower limbs, with a fresh one on the left temple. General condition much worse; more listless and much weaker.

Blood examinations.—1. June 30th. Red cells = 2,237,500 per c.mm. Hæmoglobin = 30 per cent. Colour index = 0.7. White cells = 6900 per c.mm. Differential count (300 cells): Myeloblasts, 225 (75 per cent.); small lymphocytes, 70 (23.33

per cent.); eosinophiles, 1 (0.33 per cent.); and polymorphonuclears, 4 (1.33 per cent.). During count 7 normoblasts and 1 megaloblast seen; 2 mast cells were noted when looking through the film. 2. July. Red cells = 1,675,900 per c.mm. Hæmoglobin = 20 per cent. Colour index = 0.6. White cells = 2200 per c.mm. Differential count (200 cells): Myeloblasts, 117 (53.5 per cent.); polymorphonuclears, 10 (5 per cent.); small lymphocytes, 72 (36 per cent.); and mast cells, 1 (0.5 per cent.). No nucleated red cells seen.

An examination of a stool for ova or worms was negative.

CHART 1 (Case 1).

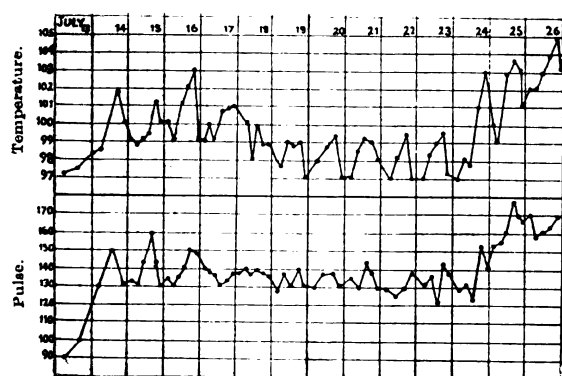


Post-mortem.—Hæmorrhages were found on the pleura, pericardium, and in the heart; also on under and upper surfaces of diaphragm, on great omentum, and on mesenteries. No hæmorrhages found in pancreas or in adrenal glands or any other organ. Petechial hæmorrhages on the skin. Heart: Right side dilated. Thrush-breast appearance on interventricular septum; muscle pale. Lungs: Patchy congestion and œdema; a few hæmorrhages beneath visceral pleura. Bronchial glands not enlarged; many of them congested. Liver: Slightly enlarged and a deep ochre on section. Spleen: Big and firm; dark purple on section. Kidneys: Capsules stripped easily. Ratio of cortex to medulla normal. The left kidney was a pale lemon colour on section; the right was similar, but showed some congestion of the pyramids. Stomach and intestines: These showed no hæmorrhages; some of the Peyer's patches in the lower ileum were swollen and congested. Mesenteric glands showed nothing abnormal to naked eye. Portions of the spleen, liver, kidneys, and several glands were taken for microscopical examination.

A smear from the rib marrow gave the following count (300 cells):—Myeloblasts, 277 (92.33 per cent.); neutrophile myelocytes, 2 (0.66 per cent.); polynuclears, 7 (2.33 per cent.); small lymphocytes, 13 (4.33 per cent.); and eosinophiles, 1 (0.33 per cent.).

CASE 2.—Male, aged 3½ years, admitted July 6th, under the care of Dr. A. M. Gossage; died July 30th. (Chart 2.) Sent in by a doctor for rheumatism, rickets, and anæmia. State: Very pale. No craniotabes, teeth good, and gums sound.

CHART 2 (Case 2).



No hæmorrhages or ulcers; all mucous membranes very pale. Heart: Loud blowing systolic murmur heard at all orifices. Liver: Half an inch below costal margin. Spleen: Two inches below costal margin; edge firm and hard, not tender. Glands: Numerous small glands on both sides of neck in anterior and posterior triangles and in submaxillary region. Axillary glands not enlarged. Right supracondylar

gland enlarged. Glands in groin not markedly enlarged. No signs of glands in chest or abdomen. Extremities: No enlargement of epiphyses or tenderness of bones. A purpuric spot over left external malleolus. July 18th: Glands, no change. Liver two finger-breadths below costal margin and spleen one finger-breadth below; spleen smaller. No retinal hæmorrhages seen.

Blood examinations.—1. Red cells = 1,800,000 per c.mm. Hæmoglobin = 28 per cent. Colour index = 0.8. White cells = 17,200 per c.mm. Differential count (200 cells): Myeloblasts, 85 (42.5 per cent.); small lymphocytes, 66 (33 per cent.); large lymphocytes, 10 (5 per cent.); polynuclears, 37 (18.5 per cent.); transitionals, 1 (0.5 per cent.); and eosinophiles, 1 (0.5 per cent.). Some of the myeloblasts show a few neutrophile granules. No nucleated red cells seen.

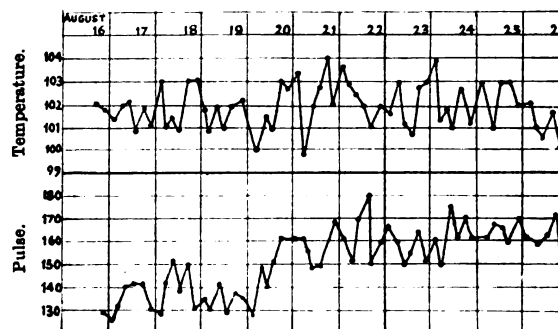
5. Final examination.—Red cells = 1,500,000 per c.mm. Hæmoglobin = 23 per cent. Colour index = 0.8. White cells = 3132 per c.mm. Differential count (200 cells): Myeloblasts, 145 (72.5 per cent.); large lymphocytes, 5 (2.5 per cent.); small lymphocytes, 9 (4.5 per cent.); large hyalines, 1 (0.5 per cent.); polynuclears, 35 (17.5 per cent.); and neutrophile myelocytes, 5 (2.5 per cent.). No nucleated red cells seen. Many of the myeloblasts showed a few neutrophile granules, and some of these cells were of large diameter.

Summary of three intermediate counts: White cells, 6800, 22,000, and 7800 per c.mm. respectively. Percentages of cells in differential counts: Myeloblasts, 67.5, 81, and 60.5 respectively; large lymphocytes, 3.5, 1, and 2.5 respectively; polymorphonuclears, 13, 3, and 9.5 respectively; and neutrophile myelocytes, 0, 0.5, and 0 respectively. No nucleated red cells were seen in two counts and a single megaloblast in the remaining one. Some of the myeloblasts were always noted to contain a few neutrophilic granules.

Post-mortem not obtained.

CASE 3.—Female, aged 5½ years, admitted on August 16th, under the care of Dr. Gossage; died on August 26th. (Chart 3.) History: Spots 18 days; sore-throat 3 weeks.

CHART 3 (Case 3).



State: Purpuric spots on chest, back, abdomen, and on both upper and lower limbs. Very anæmic. A number of carious teeth; breath very foul, tongue thickly coated, and tonsils large, ulcerated, and covered with a dirty white membrane. Glands enlarged and discrete all the way down both sides of neck. Heart: Systolic murmur at apex and base of heart; not conducted. Liver: 1½ inches below costal margin below, to the fourth space above in right nipple line. Spleen: 1½ inches beyond costal margin. Abdomen soft; no free fluid. Œdema both legs. Given 8000 units of antitoxin.

Blood examination.—Red cells = 2,650,000 per c.mm. Hæmoglobin = 30 per cent. Colour index = 0.7. White cells = 1132 per c.mm. Differential count (50 cells): Myeloblasts, 43 (86 per cent.); small lymphocytes, 5 (10 per cent.); polymorphonuclears, 1 (2 per cent.); and neutrophile myelocytes, 1 (2 per cent.). Great difficulty was encountered with the white cells owing to the extreme leucopenia. The leucocytes were enumerated three times and the average taken. In the differential count only one white cell was found in every 20 or 30 fields of the oil-immersion lens. Fortunately the slide was excellent and left no doubt as to the nature of the leucocytes. The patient was so ill that she was not disturbed again; it is regrettable that only one blood examination could be made.

Other investigations showed the presence of Vincent's spirachates and the B. fusiformis. The examination for diphtheria by smear and culture was negative.

Post-mortem.—Petechial hæmorrhages mainly confined to face and extremities. Heart: Right side dilated; the musculli papillares of the left ventricle showed well-marked thrush-breast change. Heart muscle pale. Some of the pericardial hæmorrhages passed into the muscle beneath.

Pericardium showed hæmorrhages on visceral layer on front and back of right ventricle. A few small hæmorrhages were present on upper surface of right half of diaphragm. Glands of neck and bronchial glands were discrete and numerous, but little enlarged. Larynx: Normal and showed no membrane. Liver: Slightly enlarged and showed a moderate degree of fatty change on section. Spleen: Enlarged and deeply congested. Malpighian bodies prominent. Kidneys: Slightly enlarged; capsules stripped well. Ratio cortex: medulla normal; very pale and rather greasy on section. Stomach: A few small hæmorrhages on mucosa. Intestines: No hæmorrhages found. Peyer's patches prominent in lower ileum and in cæcum. Mesenteric glands appeared normal. No hæmorrhages found in pancreas, adrenal glands, uterus and its appendages, or anywhere except in organs noted. Portions of liver, spleen, kidneys, and several glands were set apart for microscopic examination.

Marrow: A smear from the rib marrow gave the following differential count (400 cells): Myeloblasts, 338 (84.5 per cent.); small lymphocytes, 27 (6.75 per cent.); polymorphonuclears, 9 (2.25 per cent.); neutrophile myelocytes, 22 (5.5 per cent.); eosinophile myelocytes, 1 (0.25 per cent.); and large hyalines, 3 (0.75 per cent.). Only 35 nucleated red cells were observed while doing the above count. In the marrow counts the cells classed as myeloblasts were large, palish, mononuclear cells with little protoplasm and without granules; they did not quite resemble the myeloblast of the blood.

Summary and remarks.—In a recent text-book the following statement is made:—

Acute myeloid leukaemia is an extremely rare condition, which differs from the ordinary form of the disease in the shortness of its course, in the usual absence of marked splenic enlargement, and in the relatively low leucocytosis. There may be considerable involvement of the lymphatic glands. Mast cells, eosinophiles, and myelocytes are present, but the predominant cell may be either a myeloblast or a cell identical with the large hyaline of normal blood or a granular variety of it. (For the morphological appearances of the myeloblast see coloured plate facing p. 11 in Pantón's "Clinical Pathology.")

It is not proposed in this note to enter upon any discussion as to the exact pathological nature of these cases, but it should be stated that even now hæmatologists are not in agreement regarding them, and that in the days when I was a student at St. Thomas's Hospital they were all indiscriminately included under the title of acute lymphatic leukaemia. One paper (with coloured plate) may, however, with advantage be referred to—namely, "Some Atypical Cases of Leukæmia," by Dr. P. N. Pantón and Dr. H. L. Tidy.¹ Here in Class 1 the predominant cell was some form of myeloblast, as was also the case in these examples forming the subject of my note.

As regards sex, age, nationality, and distribution: No. 1 was a male, aged 6 years, a Jew from Rotherhithe; No. 2 was also a male, aged 3½ years, British, from Canning Town; while No. 3 was a female, age 5½ years, British, from Poplar. In all no very definite history of onset could be obtained, and it was usually the discovery of glands or of an enlarged liver and spleen that led to a blood examination and thence to a diagnosis. In two cases the mouth, teeth, and gums were in a bad state; in the remaining one they were good. In two very definite subcutaneous and other hæmorrhages were present clinically; in one the presence of hæmorrhages was doubtful, a suspicious spot or two only being observed. In all the enlargement of the liver and spleen, while perfectly obvious and definite, was only of a moderate degree. All had one or more sets of glands palpable and enlarged to a greater or less extent.

The hæmorrhages, already noted, constituted the principal feature in the necropsies of Cases 1 and 3. In both the pericardium and heart muscle showed petechiæ; in addition, in each the latter gave macroscopic evidence of fatty change. In Case 1 the marrow contained 96.66 per cent. of non-granular mononuclear cells and 92.33 per cent. of myeloblastic or stem cell types; also for Case 3 in the marrow count the percentage figures of the same varieties of cell were 91.5 and 84.5 respectively.

In every example the deficiency of red cells was great. Case 3 alone had an ante-mortem count of just over 2½ millions; on the other hand, Cases 1 and 2 were each about 1½ millions at the final examination. In no instance was a count of 3 millions obtained. In von Jaksch's *anæmia Thursfield*² gives the average in a series as 2,900,000

per c.mm., and remarks that low counts are very uncommon. The colour index was 0.8 for two and 0.6–0.7 in the remaining one. Nucleated red cells were usually absent, and always so before death; only 8 were seen in the first differential count of Case 1 and none afterwards; they were wanting in Case 3, and in 2 a single megaloblast was once observed in five counts.

In Case 1 myeloblasts were 75 per cent. and lymphocytes 23.33 per cent., to be followed by percentages of 58.5 and 36 respectively. In Case 2 the percentages of myeloblasts taken in the order of five counts were 42.5, 67.5, 81.0, 60.5, and 72.5. In Case 3 the myeloblasts reached 86 per cent. in the only examination that was possible. Next taking the leucocytes, the only example showing anything approaching a leucocytosis was Case 2—namely, 17,200 on the first examination and 22,000 on the third; later on before death the counts were 7800 and 3132. Case 1 gave counts of 6900 and 2200. In the girl the leucopenia amounted to 1132. Although few cells could be got together to form a differential count, the predominance of the myeloblast was unquestionable. Confirmation was added by the post-mortem findings and the count of the marrow film.

As regards Case 2, Dr. Gossage inclined to a diagnosis of acute myeloid leukaemia from the first, while Dr. Pantón and the writer held it impossible to decide between leukaemia and von Jaksch's *anæmia* on the first count. The four subsequent examinations made prior to death turned the diagnosis to acute myeloid leukaemia. The points deciding in favour of the latter were the practically complete absence of nucleated red cells, if one wandering megaloblast be excepted, the steady fall in the white cells, and the rise in the percentage of myeloblasts, which on one occasion touched 81 per cent., from the initial percentage of 42.5; these cells were 72.5 per cent. just before death, when the percentage of non-granular mononuclear cells was 80. I was glad Dr. Pantón agreed with my diagnosis in the first two cases; the third he did not see.

Dr. Gossage and Dr. Riviere have accorded me permission to make full use of their clinical notes, for which I desire to tender them my thanks.

Shadwell.

LIGATURE OF THE LEFT HYPOGASTRIC ARTERY FOR TRAUMATIC GLUTEAL ANEURYSM.

BY HAROLD M. FROST, M.D.,

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In view of the rarity of traumatic aneurysms of a similar origin the following case is presented.

The patient, a lance-corporal, was admitted to the American Women's War Hospital on July 31st, 1916, having been wounded in the left buttock by a fragment of shell on July 21st. He stated that the missile was removed in France two days later. There was no history of unusual hæmorrhage, and since operation the wounds had been healing rapidly.

On admission to this hospital the buttock was normal in size and colour without tenderness. There were two small superficial incised wounds nearly healed and granulating cleanly. Manipulation of the limb elicited no pain. The temperature was normal. The next day the patient was allowed to get up; he walked without pain. Three days later he developed an evening temperature of 100.6° F., but suffered no pain. With a normal temperature next morning he got up, walking about without symptoms during the day. At evening the temperature rose to 102°, and for the first time he complained of a dull aching pain down the back of the thigh. Examination of the buttock revealed no abnormality save a slight general swelling. During the night the pain became more severe, requiring sedatives for relief. The patient continued in bed through the next day with persistent dull pain from thigh to calf. The evening temperature was again high. The buttock had enlarged considerably, was of normal colour and not tender. Pressure upon it increased the pain down the limb. A slight thrill was detected, and on auscultation a definite bruit was heard. The diagnosis of gluteal aneurysm was made, and it was decided to operate before the blood could further dissect the tissues.

The operation was done the next morning (August 7th). In view of the superficial nature of the wounds, it seemed likely that the aneurysm sprang from one of the terminal

¹ Sonderabdruck aus *Folia Hæmatologica*, Band xvii., 1913.

² *Diseases of Children*, p. 523.

branches of the gluteal arteries, and that it could be controlled through a buttock incision. Nevertheless, an emergency laparotomy lay-out was prepared. With the patient in the prone position, a 7-inch incision was made from the posterior superior spine of the ilium towards the great trochanter of the femur. The fibres of gluteus maximus and medius were separated, revealing a tense, pulsating, purple layer of fascia. When this was incised there was a sudden spurt of arterial blood, rising upwards some four feet. The opening was rapidly enlarged, revealing a cavity beneath the gluteal muscles with a capacity of about a pint, extending inwards to the region of the greater sciatic notch. The bleeding was profuse, but with rapid sponging it could be seen that the bleeding point lay within the great sciatic notch beyond the reach of clamps. A gauze pack was introduced and firm pressure applied. The patient's condition had rapidly grown worse. The pulse, which before operation was about 100 and of good quality, jumped quickly to 140, becoming thready and weak. In spite of pressure the blood soaked rapidly through the pack and began dripping away. Ligature of the left hypogastric artery was decided upon.

The patient was turned and the abdomen prepared, pressure being constantly applied upon the gluteal pack. A left rectus incision was made from a point one inch above the umbilicus to the pubes. The small intestines were packed back. The sigmoid had a very short mesentery, much hampering the operation. It was mobilised by incising the mesenteric peritoneum externally. Following up the external iliac artery, the hypogastric artery was isolated and ligated. No attempt to isolate the anterior and posterior divisions was made, as it was uncertain from which branch the aneurysm had sprung. The mesenteric peritoneum was sutured and the abdominal wound hastily closed. The gluteal pack was removed for inspection. There was no clotted blood. The cavity extended to the upper part of the greater sciatic notch and, feeling through the notch, a rounded cavity about an inch in diameter was discovered within the pelvis. A slight bleeding deep in the cavity was controlled by two clamps, which were left in place. The wound was firmly packed with gauze. The tissues seemed to be clean with no signs of sepsis. Before removing the patient from the table 250 c.c. of normal saline were administered intravenously.

With stimulation the patient gradually improved, and the next day, though extremely pale, was running a pulse of 130, of fairly good quality. There was no bleeding from the buttock wound, but some discomfort from the packing. Abdominal distension developed, complicated by occasional vomiting. It persisted for four days, eventually relieved by enemata and catharsis. On the fifth day the abdominal wound broke down. The skin sutures were removed from the lower half, the wound packed with gauze, and strapped with adhesive. Since the second day there had been a mean temperature of 101°. At this time the gluteal pack and clamps were removed. There was no bleeding. The wound was lightly packed.

One week after the operation the patient was in good condition, with a pulse of 100 of good quality. The abdominal wound was rapidly cleaning, the gluteal wound closing in by contraction and granulation. The temperature was down to 99°. The appetite was good and food well retained. There was no distension, the bowels moving daily. The pallor of the face was giving way to a healthy flush.

On August 20th (13 days after operation) a sudden attack of vomiting developed, after which the patient complained of abdominal pain. On removing the dressing about 1½ feet of small intestine were found extruding from a small perforation in the lower half of the wound. The intestine and adjacent area were carefully cleansed and the gut replaced. The wound was firmly strapped. There were no severe consequences. For three days there was a moderate distension without vomiting. The temperature stayed about 101° for a week and then gradually fell to normal. For four days the intestine was visible through the wound when dressed, being shut in then by granulations.

One month after operation the patient was up in a chair, in excellent condition. Both wounds had granulated to the level of the skin. A left toe-drop was noticed, which still persists though improving under massage and electrical treatment. It was not noticed before operation and resulted probably from trauma to the sciatic nerve or its roots by pressure of the pack or by operative procedures. There was a small area of anaesthesia over the front of the ankle and lower third of the leg.

This case is a type of many others in which an injured vessel, stretched to the breaking point, bursts with the sudden appearance of the signs of aneurysm. An X ray, taken during convalescence, reveals a small fragment of shell, about a quarter of an inch in all dimensions, lying within the pelvis near the left border of the lower sacrum. It apparently traversed the great sciatic notch, injuring the superior gluteal artery just within the pelvis.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF PATHOLOGY.

The Pathology of Speech.—The Role of the Phagocyte in Cerebro-spinal Meningitis.

A MEETING of this section was held on Nov. 14th, Professor F. W. ANDREWES, the President, being in the chair.

Dr. E. W. SCRIPTURE demonstrated by means of lantern slides a New Method of Studying the Pathology of Speech. The speech was registered on a revolving blackened cylinder. The inscriptions showed characteristic abnormalities in many diseased conditions. These abnormalities could be seen in the records long before any speech defect could be detected by the ear. A certain peculiar laryngeal vibration was always found in records of disseminated sclerosis; a speech record in early cases could be depended upon to avoid the frequent mistake of diagnosing this disease in its early stages as neurasthenia or hysteria. The speech in general paralysis likewise presented an abnormality of a peculiar kind; it consisted in an uncertainty of the speaker concerning the typical forms of the sounds. For example, the paretic when saying "Peter Piper's peppers" would make all the "p's" slightly different from one another. Each "p" alone would be a correct one in some language or dialect. Any normal person would make all the "p's" correct to the type he had learned, and no one could purposely change the type from moment to moment. It was only the paretic who showed this vacillation in type. For this condition the term "asaphia" was introduced. Asaphia was clearly seen in the records long before it could be detected by the ear. This offered a means of avoiding mistaken diagnoses in early cases. One object of these investigations was to establish the speech peculiarities for the various diseases. When this had been accomplished, there would be no confusion or doubt concerning the speech signs. They were fixed—and the diagnosis often settled—the moment the record was made. In a case of doubt the patient would be sent to the pathological laboratory for an inscription as a kind of speech-Wassermann. Another object of these investigations was the reduction of the speech signs to fundamental forms. Thus the many varieties of speech in disseminated sclerosis had been found to be simply combinations of ataxia, anataxia (i.e., efforts to control ataxia), hypertonia (spasticity), and anatonía (efforts to control spasticity). The earliest sign of general paralysis, asaphia, was followed by apraxia and higher mental disturbances, all of which showed themselves in speech. Speech curves were shown from a girl who had worn a tracheotomy tube for 14 years and who passed no air through her larynx. She had learned to speak in a perfectly clear way although very faintly. There were even differences in pitch as she sang "ah." This was done by a peculiar action in the mouth and throat. The speech of those who had learned lip-reading must be regarded as pathological on account of its defective nature. The wrong pitch of the voice, the hollow tones, the monotony, the mistaken enunciation, &c., were all results of the teaching. Dr. Scripture had for some years been investigating these abnormalities, and he showed how many of them can be corrected. The field of speech pathology was very vast and had many ramifications into laryngology, otology, neurology, and general medicine. Although the illustrations in this communication had been drawn mainly from neurology, this was merely the result of special interest. It would be a mistake to confine the work to any one clinical department; its correct place was in the pathological laboratory under the influence of teaching concerning the general principles of disease. The work was so eminently practical that opportunity should be offered to every student to learn something of it. The difficulties of this work in a completely unexplored field had been very great; the speaker expressed deep gratitude to those who have aided him, particularly Dr. F. E. Batten, of the National Hospital for the Paralysed and Epileptic, Professor Andrewes, of St. Bartholomew's Hospital, Dr. F. W. Mott, of the Claybury Laboratory, and Dr. A. Feiling, of the Maida Vale Hospital, and to the National Medical Research Committee for some aid in defraying expenses. All

the records made at the institutions mentioned were the first ones made of these diseases.

Dr. CRESSWELL SHEARER and Dr. H. WARREN CROWE communicated a paper on the Rôle of the Phagocyte in Cerebro-spinal Meningitis. As the result of a number of experiments with freshly drawn spinal fluid obtained by lumbar puncture of cerebro-spinal fever patients, in which the leucocytes had been shown to be alive (by trypan-blue staining and observation on the warm stage), Dr. Shearer and Dr. Crowe stated that they had obtained good evidence that the meningococcus could be taken up by human leucocytes in large numbers and retained by them for some considerable time without undergoing digestion. They had succeeded in recovering living germs from the leucocytes of a number of such cases. It was well established that in the case of freshly isolated strains of the meningococcus the leucocytes would not take them up at first; although there were said to be exceptions to this rule (Kolle and Wassermann), Dr. Shearer and Dr. Crowe had met with none in their work. In the case of old laboratory cultures, on the other hand, ingestion on the part of the phagocytes took place with great rapidity. In a short time the germs were killed and completely digested by the leucocytes. This was also found to be the case with the majority of nasal strains of the meningococcus obtained from chronic "carriers," although there were great individual differences in this respect. In the intermediate stage between the fresh spinal condition and the naso-pharyngeal state, it was shown experimentally that they could be taken up, but not killed, by the leucocytes. They could be recovered from these leucocytes after periods of 24, 48, or even 60 hours, and grown on artificial media. The conclusion, therefore, was that infection occurred by leucocytic conveyance. This might be the reason why direct infection was so uncommon in cerebro-spinal fever. The virulent organism was insusceptible of being attacked by the phagocytes. The longer the germs grew in the "carrier" throat the more easily would they be ingested, until a time was reached when, on ingestion, they were also destroyed. Somewhere between these two extremes infection might produce the disease. The organism was sufficiently weakened to give in to the leucocytic attack but not to lose its life in the battle. Should infection take place at this point the leucocytes would pick up the germs from the mucous membrane of the naso-pharynx and, in the course of their wanderings, sometimes carry them into the spinal canal. There the liberated organisms might set up the disease at the same time re-acquiring the power of resisting the attack of the leucocytes in the presence of normal serum.

SECTION OF OTOLGY.

Exhibition of Cases and Specimens.

A MEETING of this section was held on Nov. 17th, Capt. H. J. MARRIAGE, R.A.M.C. (T.), the President, being in the chair.

The PRESIDENT, in the course of a short introductory address, intimated that a committee of the section had been appointed to encourage research in otology, consisting of Mr. J. S. FRASER, Dr. Albert Gray, Mr. G. J. Jenkins, Sir William Milligan, Mr. W. M. Mollison, Mr. Sydney Scott, with the President and honorary secretaries as *ex-officio* members. One of the objects of the committee would be the standardisation of the tests for hearing while others were the promotion of post-mortem investigations in cases of deafness, and the following up of interesting cases to make the records complete.

Dr. P. WATSON-WILLIAMS (Bristol) exhibited a female patient, aged 26, in order to demonstrate a good result in hearing two months after myringotomy for chronic adhesive catarrh, which had persisted for several years. Having found that the left sphenoidal sinus was infected, he opened and drained it; but finding also stapedo-vestibular ankylosis, he felt it was a case calling for the performance of myringotomy. Within five minutes of recovering from the anaesthesia she could hear whispered words at the distance of 24 feet. With the idea of producing more permanent improvement, he removed the drum more freely, also the lower half of the handle of the malleus. Though the drum was dry at the time, acute otitis media followed a few days after the operation, which he attributed to the existence of a chronic latent infection of the middle ear. He urged that an examination of the nasal sinuses should be made in all middle-ear infections. The case was discussed by the PRESIDENT, Sir WILLIAM MILLIGAN, Mr. HERBERT TILLEY, Dr. W. HILL, Dr. DUNDAS

GRANT, Dr. URBAN PRITCHARD, and Mr. S. SCOTT, none of whom were hopeful of anything like a permanent result from this procedure for the condition named.—Dr. WATSON-WILLIAMS, in his reply, reminded members that there was a marked improvement before suppuration could have been a factor. He carefully pointed out to the patient and her parents that he could not guarantee a permanent result, and he operated upon the worse ear.

Mr. J. S. FRASER demonstrated, by means of the epidiascope, sections of (1) a case of Otosclerosis from an old woman; (2) Fracture of the Base of the Skull involving the Middle Ear, with only slight changes in the labyrinth; (3) Fracture of the base of the Skull, with transverse vertical fracture of the petrous bone, and hæmorrhage in the hollow spaces of the labyrinth.—Mr. C. E. WEST thought the case lent colour to the theory that otosclerosis was essentially an infective or post-infective process originating in the tympanum, and it was important to arrive at a definition of the term otosclerosis. He expressed his objection to the term "chronic adhesive process."—Dr. DAN MCKENZIE suggested that one should be wary against over-estimating the value of post-mortem specimens in controversy. There was a difficulty in tracing a pathological connexion between the local inflammatory condition and the otosclerosis.—Dr. A. GRAY (Glasgow) differed from the view taken by Mr. Fraser, as he had seen several specimens of otosclerosis without any otosclerotic change in the bone itself; nor had he seen round-cell infiltration or any sign of activity.—Sir W. MILLIGAN thought it would be a hard task to prove that otosclerosis was secondary to the condition of the middle ear. He believed the cause would be found to be related to one of the internal secretions of the body; for example, when otosclerosis occurred in young girls it was usually at the time they commenced to menstruate, though he did not suggest the relation of cause and effect. The family history of these cases should be carefully investigated.—Mr. FRASER replied.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

Functional Gastric Disturbance in the Soldier.

THE quarterly meeting of this association was held at the Medical Society's Rooms, Chandos-street, W., on Nov. 21st, Lieutenant-Colonel DAVID G. THOMSON, the President, being in the chair.

The PRESIDENT alluded in sympathetic terms to the decease of a distinguished physician and psychologist, Dr. Ralph Brown, who was assistant physician at Bethlem and Bridewell Hospitals and proposed a vote of condolence to Dr. Brown's relatives. He invited information from members which would assist in carrying out the project of having overseas branches of the association, the idea having been strongly taken up in 1891. He concluded by saying that the registration of nurses was being watched by the Council.

Temporary Captain COLIN McDOWALL, R.A.M.C., read a paper entitled "Functional Gastric Disturbance in the Soldier." He said that functional disturbance of the digestive system was a common accompaniment of neurasthenia, from which latter complaint many soldiers returning from the war were suffering. Anorexia arising from the mental state was not unusual. Sometimes patients who had been on a special diet for a period on account of organic disease found themselves unable to resume normal diet when the time had arrived for them to do so. One of the cases narrated was that of a single man, aged 25, who was earning very little in a menial occupation when war broke out. While at the Dardanelles he developed dysentery and "gastritis," but stated that before that happened his nerves became bad. He had diarrhoea and vomiting, and was sick every day. He found himself unable to walk, and his urine dribbled away in the day time, and night time always resulted in his being wet. On arriving in England he was treated in a hospital, but he still had vomiting. Ever since leaving the Dardanelles he had lived on milk and custard, and had been kept in bed always on account of the weakness of his legs. When Captain McDowall saw the patient he convinced him that his legs were not as weak as he supposed, and he was encouraged to walk; at the same time he was put upon light diet, from which he was soon transferred to ordinary meals. He was not sick in the hospital once, and he became an active worker in the ward, later going for five-mile route marches

with other patients. Two months after the commencement of treatment at this hospital he went back to duty in good health, his weight having increased 7 lb. When the dysentery was cured this weak-minded man lacked the initiative to tackle ordinary food: he was drawn along the path of the régime of a hospital, but at that stage a small amount of individual attention would have obviated much of the subsequent state. So long as he was treated as an invalid he remained such. A neurasthenic was usually reasonable, and much good resulted from making his thoughts run along new lines. A somewhat similar case was that of a soldier who had been in nine hospitals before coming under Captain McDowall's care. Any emotion in his case caused vomiting, but a good result was obtained by psychical methods. He (the speaker) had not met with any cases of neurotic vomiting in which the symptoms were such as to endanger life, but in one case such a danger might have been possible, and this was described in detail. A good result here, also, was anticipated. The exact mechanism of the production of the symptoms was not clear, and how much was due to vagal stimulation was uncertain. The vagus could influence not only the secretions, but the state of motility of the stomach muscle. Vagal stimulation, performed experimentally, could produce turbulent gastric peristalsis, which might readily change into retrograde peristalsis, and vomiting might ensue. The practical point was that the vomiting was due to emotional stress, and the treatment should be directed to the offending emotional tone. This could be done by giving the patient a true insight into his symptoms, removing any worrying element, and gradually restoring to him the self-confidence which he had lost. Each case must be dealt with individually and on its own merits.

Dr. R. H. STEEN commented on the fact that many of the patients whose cases Captain McDowall narrated showed a hereditary predisposition to the condition described and to nervous instability. With regard to the strong influence which the emotions exerted on the bodily state, it had been shown that this influence made itself felt, not only on the gastro-intestinal tract, but also upon the adrenal glands. He could understand vomiting following a definite emotion, but he was anxious to know the views of Captain McDowall as to why the vomiting persisted.

Dr. R. ARMSTRONG JONES thought the thesis had supported William James's theory, that the emotion was not the cause of the vomiting, but the vomiting produced the emotion. He asked whether the vomiting was accompanied by any elevation of temperature; that was so in some cases of shell shock he had seen in whom vomiting was present. A strong emotion would often raise the temperature. Neurasthenics were very imitative, and it was bad policy to place such cases in wards with patients who had fire. He raised the question whether such men as Captain McDowall had described were fit to be sent back to the fighting line.

Mr. J. NOEL SERGEANT expressed the view, from intimate personal experience, that the victims of shell shock who vomited did not realise that the vomiting was due to the shock, but attributed it to some organic lesion. They continued to vomit because their dread acted as a continual mental irritant.

Dr. O. F. FOTHERGILL said his custom was to show the patients that the case was sympathetically understood, and then feed them well. If they vomited a meal another should be ready to give them. That had a very beneficial effect.

Dr. T. DRAPES (Ennisorthy) did not agree with Dr. Armstrong-Jones that the vomiting produced the emotion, especially as when the emotional state was abolished the vomiting ceased. These cases retained a condition of cerebral irritability, and therefore of susceptibility to all influences.

The PRESIDENT had found vomiting in cases of shell shock comparatively rarely, but the cases which Captain McDowall saw were sent to a special institution.

ERRATUM.—In the report of the meeting of the Medical Society of London held on Nov. 13th, published in THE LANCET of Nov. 18th, p. 864, we stated that Lieutenant Dunn, R.A.M.C., recounted his clinical experience of nephritis in France in the casualty clearing station zone. The initials of Lieutenant Dunn were given as W. H., but it was Lieutenant John Shaw Dunn, R.A.M.C., director of the Clinical Laboratory, Western Infirmary, Glasgow, who contributed to the debate.

Reviews and Notices of Books.

Crowley's Hygiene of School Life.

By C. W. HUTT. London: Methuen and Co. 1916. Pp. 428. Price 3s. 6d.

Newsholme's School Hygiene.

By JAMES KERR, M.D. Cantab. Eleventh edition. With 49 illustrations. London: George Allen and Unwin, Limited. 1916. Pp. 352. Price 4s. 6d.

It so happens that the two best English works dealing with school hygiene were written by authors who were subsequently transferred to appointments under Government departments. We refer to "Newsholme's School Hygiene" and "Crowley's Hygiene of School Life." The advances in this important section of preventive medicine and the alterations brought about by legislative enactments in recent years made it imperative that both works should be rewritten if they were to retain their usefulness. The authors by reason of their official position were debarred from performing this duty. During this year, therefore, we have had the coincidence of the issue of both books in a new form entirely rewritten by new authors. It is no light task, and one from which many would flinch, for a new author to rewrite a standard work; and this is particularly so under the special circumstances in the case of these two books. We have therefore to congratulate both Dr. James Kerr, who was responsible for the rewriting of "Newsholme's School Hygiene," and Dr. C. W. Hutt, to whom has fallen the same task in relation to "Crowley's Hygiene of School Life," upon the conspicuous success which has crowned their labours. Under the circumstances we have detailed it is inevitable that the one book should seem to challenge comparison with the other, and the doubt naturally arises whether one is not redundant. This fear is dispelled immediately upon a comparison of the books, which differ so greatly in content and in the treatment of the subject matter that no question of rivalry or even of overlapping arises.

"Newsholme's School Hygiene" has long been the familiar possession of all those interested in the health of school children, but at the time of its first appearance in the year 1887 under the signature of its original author, Dr. Arthur Newsholme, the subject of school hygiene was little more than a patchwork of hygienic commonplaces applied to the special requirements of the school. To-day the subject has assumed vast proportions, and it is not saying too much when we claim that the very existence of a satisfactory standard of physical health among the adult population, and consequently of future generations, depends on the intelligent application of the principles of health in the interests of our school children at the present moment. The modest proportions of "Newsholme's School Hygiene," as presented by its early editions towards the end of the last century, were implicit in the existing conditions, but even then it always contrived to keep a little in advance of the times and to lead rather than to follow. It still remains true to tradition and in its new appearance there is no falling away from the high standards established. It is no exaggeration to say that as far as England is concerned we owe much of the modern conceptions of school hygiene to Dr. James Kerr, the author of this new edition. A substantial portion of the research work which has been carried out in connexion with improvements in the health and nutrition of school children has been pursued under his direction in the schools which are administered by the Education Committee of the London County Council. In a sense this new volume is a memorial of the liberality and enterprise of London's educational authority, and of the zeal and hard work of the large staff who have worked under their distinguished chief. As at present constituted, "Newsholme's School Hygiene" is not only an authoritative text-book of all that is soundest in the subject, but it also contains a great deal of original matter which heretofore has only been independently published or has previously appeared in "School Hygiene" and other journals. The most superficial reading of the chapters on speech, eyesight, the care of abnormal children, and deafness will convince the reader of the enormous progress which has been made in the subjects since the publication of the last edition, and it is most gratifying to us Englishmen to realise that most of these

advances are due to the work and enterprise of our own countrymen. We feel convinced that for its size and scope there is no more complete and valuable work on school hygiene than Dr. Kerr's new edition of Dr. Newsholme's well-known volume.

Dr. Hutt's standpoint is that of the administrator seeking to work out conscientiously the problems involved in the practical application of such enactments as the Education (Provision of Meals) Act, 1906, the Education (Administrative Provisions) Act, 1907, the Education (Choice of Employment) Act, 1910, or the Education (Defective and Epileptic Children) Act, 1914. His book therefore deals with the actual world in which at the present moment the school medical administrator finds himself and with the problems which immediately torment him, while Dr. Kerr's book is written from the point of view of the independent investigator, untrammelled by the toils of administration. Dr. Kerr is original, stimulating, and provoking. His basis is the physiology of the child and his needs, and he does not concern himself with the practical difficulties of the administrator; where his book touches upon the limitations of the law it is unconcerned or frankly critical. It enters a vast field of research, into which Dr. Hutt, working under the limitations of legality, does not venture a foot. The great subject of educational hygiene, including the absorbing problems of over-pressure, of curriculum, of the physiology of writing and of reading, fully treated by Dr. Kerr, is entirely ignored by Dr. Hutt. This serves to emphasise what an important section of his work the busy school doctor has been virtually excluded from by the limiting effects of legislative enactments. On the other hand, the administrator will look in vain to Dr. Kerr's book for help or guidance on such important questions as, for instance, the equipment of a school clinic or the administration of the Acts dealing with the employment of children or the provision of school meals. For these he must have recourse to Dr. Hutt's book.

The books are thus complementary one to the other, and it is a pity that the titles of the two works were not so framed as better to guide the student with regard to their respective subject matters. One does not expect, for instance, in a book

on the "Hygiene of School Life" to find no reference to the subjects of fatigue or of clothing. Dr. Hutt's task has been that of discriminating selection from a vast amount of material to be found in official reports. This he has performed with almost unerring judgment, and his conclusions are in every case eminently sound and convincing. We have detected only one error of judgment in the whole of the work, and that is the useless reproduction on a reduced scale of Snellen's types for vision testing. Particularly admirable is his treatment of the infant and the infants' school, including the lower age-limit of school attendance, day nurseries and schools for mothers, of the equipment of the school clinic and of the measures, including disinfection, to be taken for prevention of spread of infectious diseases. There is one practical difficulty constantly present to the medical administrator which has not received adequate consideration at the hands of Dr. Hutt—we refer to the freeing of the scholars in our public elementary schools from the infestation of parasitic vermin. The problem is urgent and clamant.

With this one exception Dr. Hutt's survey of the administration of the Acts and official regulations in regard to school medical work is complete, and it easily takes the foremost place amongst works dealing with this aspect of school hygiene. The excellence of the print and of the diagrams and illustrations is a little astonishing, considering the price at which it is published. Together with Dr. Kerr's work, it covers the whole field of modern school hygiene, and it may confidently be expected that these two books will long remain our best standard works upon this subject.

The Making of Micky McGhee, and Other Stories in Verse.

By R. W. CAMPBELL. Illustrated by H. K. ELCOCK. London: George Allen and Unwin, Limited. 1916. Pp. 100. Price 3s. 6d. net.

THE author claims nothing more for his stories than that they are simply soldier rhymes, and he dedicates them to the gentlemen of the ranks with whom he has spent happy days. The rhymes are realistic and convey something of the spirit as well as of the language of the trenches. Mr. Elcock's drawings cleverly hit off the situations.

New Inventions.

AN AMBULATORY EXTENSION SPLINT FOR THE LOWER LIMB.

THE splint figured in the accompanying illustration was devised by us for the treatment of tuberculous disease of the hip, but can be used in many other cases in which extension of the lower limb is desired. It does not claim to be superior to those extension splints already on the market, but satisfies all the necessary requirements at a very moderate cost, and thus falls within the reach of many hospital patients who would otherwise have had to be content with a Thomas splint, patten, and crutches. The various parts of the splint are well shown in the illustration, and it is therefore not necessary to describe them, except to mention that the thigh-, leg-, and foot-pieces are made of pexuloid. The figure shows a lower limb with the splint in position before extension has been made. After extension has been applied the knee-joint is locked and the patient is ready to walk.

It will be seen that the splint is built in two sections, in the upper of which is incorporated the pelvis and in the lower the foot, so in order to put the limb under tension it is only necessary to force the two sections firmly apart. To make extension the bars are drawn forwards in front of the knee, swinging on their pivots (A, B), and are fastened together by fitting the pegs into appropriate holes; several

trials may be required to determine which hole shall be used. In this position the extension bars form a low triangle standing on the limb as base, and since any two sides of a triangle are together greater than the third, it follows that when the bars have been pushed back into alignment the base of the triangle will have become stretched to a length equal to the combined lengths of its other two sides, and this effect will be more or less pronounced in proportion to the height of the triangle. Powerful extension may thus be obtained, and it is well to begin by using the highest pair of holes, since these are often found to give all the extension needed; but later on, through loosening of the thigh-piece, stretching of the anklet, and such causes, lower pairs of holes will be required. When the bars have been locked together in alignment by the running lock (E) they are

screwed firmly down to steel strips on the sides of the thigh- and leg-pieces at C, D, in order to give greater rigidity to the splint.

As thus described, the splint is seen in its fundamental form in which it is admirable for

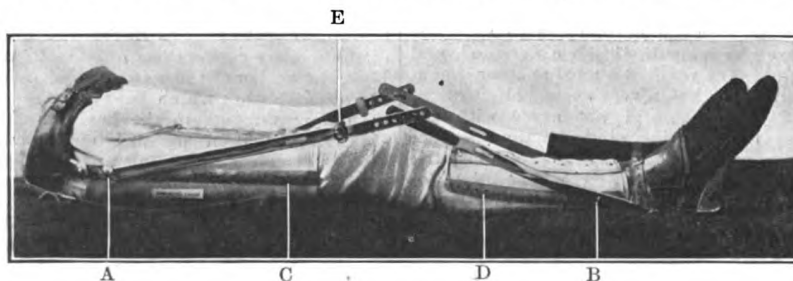
hip disease. When used for the treatment of other conditions involving contracture of joints the addition of certain accessories may be required; thus it is a simple matter to add an elastic toe-elevator for foot-drop or an anterior steel or elastic accumulator for the straightening of a flexed knee.

The splint has been made for us by Longmates Limited, of Weymouth-street, London, and has proved to be eminently satisfactory.

St. Thomas's Hospital, S.E.

R. C. WINGFIELD.

S. H. ROUQUETTE.



THE LANCET.

LONDON: SATURDAY, DECEMBER 2, 1916.

The Session of the General Medical Council.

THE General Medical Council began its second session of the year on Tuesday last, when Sir DONALD MACALISTER, in his presidential address, summarised the position and activities of the medical profession in the critical present days. After referring to the losses which the medical profession has sustained in personnel, family, substance, hopes, and prospects—matters which are all painfully familiar to our readers—he explained what had been done up to now for maintaining the supply of male medical students in training for commissions in the Navy or Army. A census of students in attendance on professional instruction in the schools of the United Kingdom, as submitted to the Army Council and an Emergency Committee of the General Medical Council, shows the following analysis:—

| | Men. | Women. | Total. |
|--------------------------|------|--------|--------|
| First-year students ... | 1422 | 636 | 2058 |
| Second-year students ... | 783 | 295 | 1078 |
| Third-year students ... | 519 | 163 | 682 |
| Fourth-year students ... | 1078 | 145 | 1223 |
| Final-year students ... | 922 | 140 | 1062 |

Of these students, 500 of the juniors were under 18 years of age in May, 1916, but all the others were above that age. The students in the fourth and final years have already been directed by the Army Council to pursue their medical studies, so that the working of the Military Service Act is practically concerned with students in the second and third years. Sir DONALD MACALISTER explained that he had called the attention of the military authorities to the danger of further depletion at this place. As a result, the Army Council has issued orders that registered medical students not classed as "fit for general service" are to be relegated to the reserve, on condition that, while left to pursue their professional studies, they enrol themselves in an Officers Training Corps. On similar representations being made to the Admiralty, that Service, said Sir DONALD MACALISTER, recognised the importance of the problem to be solved, and, so far as existing conditions permit, both the War Office and the Admiralty will attempt to adjust in a satisfactory manner the conflicting claims upon the youth of the nation who are intending to follow a medical career.

The President of the General Medical Council made an important statement upon the supply of qualified practitioners needed by our ever-growing Forces, quoting a letter received at the opening of the Session from the War Office, in which that department said that they "would gladly engage 400 more medical practitioners to-morrow if they were

forthcoming." He explained the work which the Central Committees now established in England and Scotland had done for the purpose of assisting the Government and the medical profession in securing the proper allocation of the available men. As every medical practitioner of military age who is fit for service is liable to be called to the combatant ranks, unless he receives a commission as a medical officer in the Forces or is exempted by one of the Central Committees, which are professional as well as statutory bodies, the responsible and delicate nature of the work of these Committees is evident, and in that work certain members of the General Medical Council have played an active part. This is as it should be, for the duties of the Central Committees are twofold: they have to consider the respective requirements of the Navy, the Army, and the civilian population, and while deciding who can be spared from civil practice, they have also to consider schemes for the protection of the interests of those whom, to a certain extent, they may be regarded as having recruited for active service. We published in THE LANCET of Nov. 11th (p. 844) the procedure which is recommended by the Central Medical War Committee for England and Wales as one under which the medical practitioners remaining behind could coöperate alike in carrying on the medical work of the country and in protecting the interests of their absent colleagues; but the scheme needs for its success the assistance of the profession at large if it is to accomplish its objects in any substantial way. There can be no doubt that such universal support has not been obtained. Letters which have appeared recently in the *Times* have sufficiently showed that some members of the medical profession "have not," to quote Sir DONALD MACALISTER'S words, "yet realised the duty and privilege of sharing the burdens of those who are bearing so much for us. If the voluntary organisation of the profession, which has attained so gratifying a measure of success in this country, should by reason of their defection fail to meet all the requirements of the medical services, we may have to face some form of legislative compulsion for districts that are backward in their response to the calls of patriotism." And he went on to inform his audience, or rather to warn the medical profession at large, that the Council might obtain increased disciplinary powers better to deal with cases where individuals were ascertained to be defaulting from the duties imposed upon them by the national emergency.

In a third direction Sir DONALD MACALISTER spoke words of grave counsel to the medical profession. We have all become aware that in connexion with the organisation of the resources of the nation for naval and military service for the supply of munitions, and in regard to sick relief, pensions, insurance, and other circumstances of life to-day, there has arisen a heavy demand on medical men for certificates, a demand which is steadily increasing. The giving of these certificates caused no inconsiderable trouble to the medical profession before the war, and that trouble

has now been multiplied almost indefinitely. No doubt Sir DONALD MACALISTER is sympathetic with the general practitioner in this position, but as President of the General Medical Council he felt it his duty to warn the profession that the issuing of medical certificates was their privilege, implying a trust on the part of the State in the registered practitioner, and the trust carries with it grave obligations. We agree with Sir DONALD MACALISTER that as a whole these obligations have been faithfully observed and that medical certificates have been issued, as a rule, with a due regard to truth and accuracy; but he informed the Council that important Government departments had made representations which showed that this sense of responsibility had not been present in all cases of medical certification. He uttered grave words of warning to those who may stand in need of them. Of such we trust that there are not many, but charges of giving improper certificates are to be heard against practitioners this Session.

A Great National Scheme of Research.

A YEAR ago, when the Medical Research Committee of the National Health Insurance published their first annual report, we analysed with some particularity their activities, recording in detail the various departments of the work, what had been already done, and what the Committee expected to do. The work of the Medical Research Committee is now universally recognised; of the promised researches a large share has appeared in our own columns, and with this we may assume our readers' familiarity. Of the four permanent departments, that of bacteriology has been closely associated with work on wound infections and their prevention, a large part of which has passed into general surgical practice; that of biochemistry with the successful drug treatment of dysentery and bilharziosis; that of applied physiology with the solution of various problems concerning factory hygiene, poison gases, and trench foot; and the statistical department with the great business of army medical statistics. A new fifth department of clinical research has been added this year, under the general direction of Dr. THOMAS LEWIS, at the Mount Vernon Hospital, a building which, while remaining for the period of the hostilities under the control of the War Office, has now become the formal property of the Research Committee. The personnel of the Committee has changed owing to the statutory retirement of three members, Lord MOULTON, Sir CLIFFORD ALLBUTT, and Professor MATTHEW HAY, whose places have been filled by Lord GOSCHEN, Professor GEORGE MURRAY, and Dr. A. K. CHALMERS. The present report is signed by Major WALDORF ASTOR, who has become chairman, and by Dr. W. M. FLETCHER, the secretary of the committee. Lord GOSCHEN has accepted the treasurership.

The office work of the Committee now carried on at the Central Research Institute, 15, Buckingham-street, Strand, has been colossal. The Committee have been content with nothing less than obtaining

a complete medical record of every man from the time that he is wounded or taken ill at the front until his final convalescence. During this time his case will have been recorded in the books of at least six different institutions, and the Committee at first carried out the task of extracting completely, by means of a small army of women clerks, the records on the registers of some 2000 military hospitals. A uniform card system in each hospital has now been designed to take the place of this thankless task, and the cards accumulated and sorted by the department already weigh over 15 tons. The expense of this work, although considerable, will be far more than compensated by the value of the consistent knowledge gained in connexion with granting pensions and allowances, for records can never be too full or elaborate while they are kept rigidly sifted, and the abuses of idle accumulation are avoided. Lack of such a contemporary record and the resulting impossibility of disputing fictitious claims is credited with having cost the American Government many millions of dollars at the conclusion of the Civil War, though the sum we have heard mentioned seems to us fantastic. The card system now adopted, although designed to make possible a medical history of the war complete in every particular, does not afford the means of immediate ready reference: accordingly a schedule system of cards and envelopes has been designed to obtain the current information which is urgently needed on such topics as abdominal wounds, amputations, trench nephritis, neurological cases, and the like. In addition to the written records, the basis has also been formed of a national collection of army pathological specimens at present housed at the Royal College of Surgeons of England under the care of Professor ARTHUR KEITH.

Most of the funds, as well as the scientific resources of the Committee, have been devoted to medical questions of immediate national urgency in war time. Certain pre-war work in connexion with tuberculosis, rickets, the hygienic relations of milk, and other matters has continued, but in greatly diminished proportion to the whole. The Committee justify this diversion of National Insurance funds to war problems by the statement that the solution of these problems will remain for the whole future of peace, and they have construed their labours in a large spirit which will entail the remote, if not the immediate, advantage of great bodies of insured persons. Support has been given to an organised inquiry into fatigue at factories and other medico-social problems, and the information gained has formed the basis of action of the Health of Munition Workers' Committee in framing measures for the material benefit of the vast army of munition workers. Arrangements have been made by the Committee for the physiological testing of salvarsan and its similars of French and British origin. This help not only meets a national need in founding an indispensable industry, but will materially assist the recommendations of the Royal Commission on Venereal Diseases which are being carried out in the State-supported schemes all over the country for the control of these diseases. Surprise has

been expressed in some quarters at the smallness of the funds at the disposal of the Committee and at the lack of the help of the Army machine at their backs. Mr. ROBERTS informed the House of Commons the other day that the amount of Insurance Funds paid over to the National Debt Commissioners at the end of 1915 was £30,000,000, and more recently that the amount paid out on account of the Medical Research funds for the year ending March 31st, 1916, was £53,375 18s. 7d. This is less than $\frac{1}{4}$ d in the £ of the total funds, and not along ago represented about 1 per cent. of the expenditure on the war for a single day. It would, however, be grossly unfair to judge the energies of the Committee by the amount of money which has been spent. Work of vast extent and importance has been set going in some cases at almost trifling expense. The disinfection of hospital ships, beginning with the *Aquitania*, by the use of electrolysed brine, which has resulted in abolishing secondary infections among the patients and the ships' staffs and crews, was carried out by a cell constructed at a few days' notice by Messrs. MATHER and PLATT, of Manchester, under Dr. DAKIN'S direction at their own expense. A second cell was taken over by the War Office and the whole expense of this incalculably valuable work consisted in the cost of the scientific direction supplied. The lack of direct military control, which has been deplored, has left the way open for this and other examples of generous private enterprise. Much of the work, too, has been of a kind which money cannot purchase. The Committee have been happy in their personnel, and both the retiring president and the permanent secretary have given services far in excess of the legitimate demands upon their time. The retiring members of the Committee retire only on paper, and continue to give to the work their interest and coöperation.

Annotations.

"Ne quid nlmis."

THE PROBLEM OF THE DISABLED SOLDIER.

A CIRCULAR letter to the press, signed by Sir Frederick Milner and others representing the British Workers National League, welcomes the introduction of the Pensions Bill, commented upon in a leading article in THE LANCET of Nov. 18th, but regards it as only a belated step in the right direction. To certain points the letter calls particular attention and makes definite demands with regard to them, claiming that they require consideration immediately. With this we are entirely in accord. Whatever can be done, and is going to be done, for our broken sailors and soldiers should not be postponed for future consideration or performed grudgingly after the necessity for it has been urged upon the Government from outside. Generosity is shown by its readiness, but we ask for our disabled defenders not generosity but justice accorded spontaneously and not extracted by pressure. The concrete demands made in the letter referred to include one for a definite scale of pensions

for definite disabilities, which might perhaps be found to possess drawbacks in practice, and the following may be taken as a brief summary of the remainder. It is asked that a minimum pension of 10s. per week, while incapacitated, shall be received by every man invalided out of H.M. Forces; that every man who has been duly passed into the Navy or Army as medically fit shall be deemed to have been so fit, and that every such man who has since been invalided out of the service for any disability or disease not caused by his own misbehaviour, shall be deemed to have had such disability or disease caused or aggravated by his service. It is further asked that in the case of loss of nerve or reason those affected shall be maintained in special homes at their country's expense, or that, if admitted to asylums, they shall be paid for in like manner by the State, their pensions being handed to their dependants and not devoted to their maintenance. The last condition proposed is that a pension due for length of service shall not be taken into account in assessing a pension for disability or disease contracted on active service. We repeat what we have already said, that the cause of the disabled soldier should be treated as a matter of the gravest national importance, and we admit misgivings as to whether this has always been done upon parallel occasions. Certainly among the classes from which in the past the Army was recruited the general impression has been that after the South African War the disabled were not treated as justice, not to mention gratitude for their services, demanded. We need not go back further for precedents, but would rather that a fresh start were made upon an occasion which we believe should be treated as unprecedented. In his efforts on behalf of our disabled sailors and soldiers Sir Frederick Milner should find supporting him an overwhelming force of public opinion.

THE ALIMENTARY ASPECTS OF WHOLE-MEAL BREAD.

AN article in *Il Morgagni* of Oct. 27th by Dr. E. Bertarelli, professor of hygiene in the University of Parma, who has made a special study of the medical and economic aspects of food, is interesting to British medical men on the institution of food control in this country. Many physiologists remain sceptical as to the exact utility of the protein substances in a bread rich in bran. Nor is it sufficient to insist that by introducing bran into bread there is also introduced a higher percentage of organic nitrogen which is lost in white bread; it should also be shown that this nitrogen is really capable of being utilised. On this point there is discrepancy of opinion which blames the bran as exciting peristalsis, and causing slight but undeniable catarrhal inflammation of the mucous membrane of the small intestine, so that in consequence the utilisation of the nitrogen is in effect less than with the consumption of ordinary white bread. This accusation is especially levelled against a whole-meal bread prepared by softening the grains of wheat for a short time only and immediately afterwards grinding them in a machine which lacerates them and, by the addition of water, converts them into a homogeneous dough. Such a dough is not easily leavened, is but slightly changed, and is full of water and coarse detritus of hard bran. Nowadays whole-meal bread, or what is commercially sold under this name, is prepared in the same way as white or brown bread, using flour containing

about 90 per cent. of entire wheat. Complete utilisation of the grain is not a preconception of bigoted economists who desire at all costs to save fragments of alimentary substances from waste. It ought to be possible, without causing any harm to the organism, and by making use of the outer portion of the spermoderm of the grains, to use the protein substances existing in the bran. It ought not to be impossible to find some method by which the bran will have no harmful effect, even if it is used in the same relative quantity as it is present in the grains. Economists have no difficulty in showing that the utilisation of the whole grain effects a gain of even 15 per cent. in comparison with present methods, but in reality the question is how to make the bread in such a way that the physiological gain runs parallel to the economic. This is the point to which Professor Bertarelli draws attention in discussing the preparation of "natural" bread, in which the entire grains, or caryopsides, are soaked in water for a long time so that they undergo changes comparable to those which take place when barley is malted, affecting every part of them from the outer layers to the starch itself. By this means, he suggests, there takes place a partial hydrolysis of the cellulose and a separation, by maceration, of the different layers so that it is improbable that there would be left in the bread fragments of resistant and hard bran similar to what is found in a bread prepared from whole grains ground in the usual way. After baking, a good bread is produced which is rich in bran, but which, neither in appearance or taste, or in the presence of detritus of scaly fragments of bran, resembles some of the usual types of bread which are classified under the term of whole-meal bread. Moreover, leavening is absolutely perfect.

TREATMENT OF TYPHUS FEVER WITH AN ANTITOXIC SERUM.

FROM the Pasteur Institute at Tunis are reported the first results clinically obtained from the employment of a new serum in cases of typhus fever.¹ They are distinctly encouraging. The blood serum of patients convalescent from typhus fever and that of animals which have been experimentally inoculated with the virus of typhus fever, and which have recovered, presents for some days, usually the sixth to the tenth following the defervescence, definite protective properties against this virus. It is not possible to gain cultures of the organism in this disease, as it is not yet known, but it is possible to obtain and make use of the virus itself, and it has been found that the guinea-pig is especially sensitive to it. By inoculating such animals in a suitable manner the virus can be preserved indefinitely by passage from one animal to another. Because of the natural toxicity of the tissues and the phenomena of anaphylaxis, however, the treated serum cannot be directly used, but, fortunately, it has been found that emulsions of the spleen or the suprarenal capsules of these animals infected with typhus fever can be readily borne by the horse and the ass—can, in fact, be given intravenously and by repeated inoculations, and as these organs are found to be amongst the most virulent in the guinea-pig a means is thus gained of immunising both horse and donkey. To gain the antitoxic serum from the donkey, the

animal receives intravenously, at three-day intervals, first three inoculations of the leucocytic deposit of 5 c.c. of the infected blood of the guinea-pig, then 18 inoculations of an emulsion of the crushed centrifugalised spleen; then 22 of a similar emulsion, but only crushed; and finally, after the 41st injection, there are added the products of the crushed spleen and an entire suprarenal gland. The animal, having submitted to 125 inoculations, all borne without inconvenience, is bled after the 30th, 60th, 80th, 99th, 105th, and 115th inoculations, and such serum is used for clinical purposes. In the first experiments with this serum upon the guinea-pig, the blood obtained at the 30th and 60th inoculations only was used. The results showed that where the typhus virus alone was injected into the peritoneal cavity of the animal typhus fever resulted, but if the serum was simultaneously given no rise of temperature or any symptom followed; if given the same day as the commencing pyrexia of the fever the infection was arrested; and similarly even a day or two later. The serum was next tried upon human cases, 38 in number; of these 22 were French and 7 were Serbians. Careful blood tests were employed to ensure that these cases were genuine examples of typhus fever. Of these treated cases there was only one death, and that was due to an independent complication. Such results contrast so favourably with the general death-rate of this disease as to warrant the claim that the serum is a valuable remedy. The following clinical notes are reported:—

(1) Temperature: The sustained pyrexial plateau typical of typhus fever was in all cases where the serum was given converted into large oscillations of temperature; in a fifth of the cases definite defervescence followed after one or two inoculations. (2) Nervous symptoms: In no cases were delirium, stupor, or prostration present; headaches or insomnia was quickly relieved; in but a few cases was there paralysis of the sphincters, which is usual in the second week of the disease. (3) General state: There was absence of the "typhoid state"; in no cases was there constipation, so frequent a condition in typhus fever; large quantities of urine, sometimes three or four litres, were passed; convalescence was more rapid. (4) Duration of the disease: The usually accepted length of typhus fever is 13 to 14 days; in this series of cases it averaged 11 days only. (5) Mortality: Most striking is the beneficial effect of the serum upon the death-rate, given by authorities as anything from 22 to 50 per cent.; in this small series the mortality was only 3 per cent.

Finally, some brief notes are given upon the manner of treatment. It is important to start treatment as early as possible, even in the "suspect" stage, and daily hypodermic inoculations of about 10 to 20 c.c. of the serum should be given up to the stage of defervescence. Detailed accounts and charts of all the cases are published, and it is hinted that further extensive observations will shortly be forthcoming.

FUMIGATION OF SHIPS AND BUILDINGS WITH HYDROCYANIC ACID.

Surgeon R. H. Creel, of the U.S. Public Health Service, in discussing the United States quarantine regulations has noted that they concern themselves with six diseases—cholera, typhus, small-pox, yellow fever, plague, and leprosy. For each there are specific regulations based on the known mode of spread, attention being given in case of cholera to the people and their food; in typhus and small-pox to the people and their personal effects; in yellow fever to the people and their environment; in plague to rats and their parasites. Consequently, if there is question about typhus, yellow fever, or plague, there must be

¹ Dr. C. Nicolle and Dr. L. Blazot, *Annales de l'Institut Pasteur*, September, 1916, p. 446; and *Arch. de l'Institut Pasteur de Tunis*, September, 1916, p. 225.

endeavour to destroy lice, mosquitoes, rats, fleas, or possibly bed-bugs, and this will necessitate some kind of fumigation, either with sulphurous acid, carbon monoxide, or cyanide gas (hydrocyanic acid). The slow diffusion of sulphurous acid, the damage it does to cargoes of many kinds, and the difficulties of its preparation, have induced some to use carbon monoxide. Surgeon Creel thinks carbon monoxide unsuitable, as it must be produced in a tugboat fitted for the purpose, and so it is expensive; further, it has no smell, and gives no warning of its presence. He therefore decides in favour of cyanide gas, for which he claims many advantages. In the first place, its preparation from dilute sulphuric acid and pulverised cyanide of sodium or potassium is very simple and at the same time cheap, unless a high concentration of the gas is necessary; it is cheaper than sulphurous acid at any rate. Further its high rate of diffusion shortens the period of disinfection, a most important consideration where the delay of ships and their passengers is concerned, and its characteristic smell prevents accidents during disinfection. Surgeon Creel has been using cyanide gas at New Orleans for a year and a half in the disinfection of 180 ships and of many buildings in the city, with but one death, that of a stowaway. As the result of his experiments he gives the following as the necessary time of exposure of a ship's hold to cyanide gas of the strength noted to ensure the destruction of the vermin mentioned. The usual standard is 5 oz. of potassium cyanide or 3½ ounces of sodium cyanide to each 1000 cubic feet of space in the hold.

| — | Duration of exposure which kills. | Quantity of cyanide of potassium per 1000 c. ft. | Cost per 1000 c. ft. |
|--------------------|-----------------------------------|--|----------------------|
| Mosquitoes | 15 minutes | 4/10 oz. | 1d. |
| Fleas | 15 .. | 2½ .. | 2d. |
| Bed-bugs | One hour | 5 .. | 4d. |
| Rats | " | 5 .. | 4d. |
| Cockroaches | " | 10 .. | 8d. |
| Lice | Two hours | 10 .. | 8d. |

Fumigation generally lasts for one hour, but nothing is said of the time required for the necessary subsequent opening up of hatches and ventilation.

A CASE OF "BLOODY TEARS."

CASES of "bloody tears" are among the curiosities of medical literature. In the *Boston Medical and Surgical Journal* of Oct. 26th Dr. M. J. Konikow has reported the case of a man, aged 50, who had been in good health except for attacks of slight epistaxis. An attack occurred which he and the members of his family could not control by ordinary means and Dr. Konikow was summoned. Blood was flowing freely from the right nostril. An anterior tamponade failed to stop it, merely directing the flow backwards. Complete stoppage was obtained only by combined anterior and posterior tamponades. A few minutes later large "bloody tears" began to run down the cheek from the right eye. Pressure upon the right nasal duct stopped this flow. Of course, the source of these "tears" was the blood that was caught between the tamponades and forced into the nasal duct. True sanguineous lacrymation—i.e., "bloody tears" produced directly by the lacrymal gland—must be extremely rare, if indeed it has ever occurred. In the *Transactions of the Ophthalmological Society* for 1890-91 Mr. F. R. Cross reported the case of a female, aged 21 years,

who for several years had been suffering from bloody tears coming occasionally from the left eye. Excluding other sources Mr. Cross thought that the lacrymal gland was responsible for this phenomenon. Half a century ago Hasner reported two cases of "bloody tears," one in a girl of 13 who showed this symptom during the two years preceding her first menstruation; the other in a healthy young butcher in whom the cause of the trouble lay in a lentil-sized polypus of the upper conjunctiva.¹ S. W. Ochapowski reported a case of "bloody tears" which he attributed to the general hysterical character of the patient²—a sufficiently puzzling diagnosis.

VINCENZ CZERNY.

THE death of Vincenz Czerny last month, at the age of 74, has removed a surgeon of international fame and one whose personal qualities would have made him beloved as well as famous in any rank of life. The son of a pharmacist in a small Bohemian town, his early familiarity with lens and microscope in natural-history pursuits took him to Prague University, where he began to train as a biologist, and promptly showed his inventive faculty on the technique of section-cutting. At the age of 25 he was induced by Billroth to assist him in his surgical clinic, where he gradually gave up his histological work for the larger field of surgical operation. At 29 he accepted the chair of Surgery at Freiburg, working there with men like Kussmaul and Nothnagel, until, in 1877, when he was still only 35, he succeeded Simon in the new surgical clinic at Heidelberg, which proved to be his lifelong abode. Possessed of a ready pen and incisive style, and the author of 150 or more short practical papers, Czerny never wrote a systematic treatise, and his name, although associated with the first vaginal extirpation of the uterus and with cancer research in general, is known only to the specialist in connexion with numberless improvements in operative methods. His intestinal suture is, of course, in every student's text-book. Czerny was recognised as a surgical leader in his own country; he was president of the German Surgical Society in 1901, of the International Surgical Society in 1908, and from 1910 he was honorary president of the International Society for the Study of Cancer, to which position his work in founding the Cancer Institute in Heidelberg on the lines of institutes in Moscow and Buffalo richly entitled him. As a teacher Czerny fully recognised the value of *können* over *wissen* and worked for the revision of the German medical curriculum on practical lines. In so doing he held up English and American methods as worthy of imitation, as well as the effect of our General Medical Council in standardising medical education. In his intimate association with his staff and hospital patients Czerny showed a warm human sympathy which will make his loss acutely felt and his place hard to fill.

AT a meeting of the Section of Surgery of the Royal Society of Medicine, 1, Wimpole-street, W., to be held on Wednesday, Dec. 13th, at 5 o'clock, a paper will be read by Miss Francis Ivens, M.S., of the Hôpital Auxiliaire No. 301 à Royaumont, on a Clinical Study of Anaerobic Wound Infection, with an Analysis of 107 Cases of Gas Gangrene.

¹ Allgem. Wien. med. Zeitschrift, No. 51, 1859, and No. 1, 1861.

² Russky Wratch, 1902, 1.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

TUESDAY, NOV. 28TH.

THE General Medical Council commenced its winter session at its offices, 44, Hallam-street, W., Sir DONALD MACALISTER, the President, being in the chair.

The President's Address.

Sir DONALD MACALISTER, in his presidential address, referred to the death of two old and distinguished members of the Council, Sir William Henry Power and Sir Victor Horsley, while Sir Lauder Brunton, who has also died since the last meeting of the Council, had acted as a referee in pharmacology in connexion with the last edition of the British Pharmacopoeia. The principal part of his address was taken up with a consideration of the maintenance of the supply of male students; with the needs of the Navy and Army and no less of the country for practitioners, and the work of the Central Committees, designed to meet those needs. He noted the increased demands for medical certification and said that the giving of improper certificates would be a count in the charges against certain practitioners during the session, the charges being advanced in connexion with the alleged "covering" of women acting without qualifications as midwives. He pointed out that the Local Government Board had taken up the question of the scarcity of certified midwives in certain districts, and had issued regulations for subsidising local authorities and organisations undertaking to increase the supply, and for providing grants towards the remuneration of practitioners, who could do much to further in their own districts local schemes in support of the action of the Local Government Board.

With regard to unqualified medical practice, he said that in order to meet the evils disclosed by the report of the recent Royal Commission on Venereal Diseases fresh legislation would be needed, and Dr. Langley Browne, by a motion appearing in the programme of business, proposed, he said, to ask the Council to affirm that such legislation, to be effective, must include provisions restraining the treatment of venereal diseases by unqualified persons, and also provisions giving effect to the recommendations of the Select Committee on Patent Medicines, which the Council has already approved. The Council, added the President, is persuaded that fresh legislation is also required, in the public interest, to remedy the Dentists Act, 1878.

In connexion with the attempts made to protect our Forces and the public against danger through the indiscriminate use of drugs like cocaine Sir Donald MacAlister said: "As long as any unregistered and unqualified person may call himself a 'person practising dentistry,' or call his shop a 'dental surgery,' and in virtue of this assumption claim to be supplied with the drug from the nation's stock, so long will the best-intentioned efforts to regulate the supply or to restrict its use to instructed and responsible practitioners, encounter difficulties that may prove insuperable." He concluded by intimating that measures for the regulation of medical practice during the war had been adopted by the legislatures of Victoria, Nova Scotia, and Grenada; that a new law regulating medical practice in Japan having become operative last October, the qualifications of the Japanese Medical Colleges would be entitled to a place in the Foreign List of the Register; that Part II. of the Medical Act, 1886, had been applied to the Straits Settlements, where there are many capable Japanese practitioners; and that the qualification of the King Edward VII. College of Medicine in Singapore had been recognised for registration in the Colonial List.

Uncertified Midwives: Warning Notice.

The Council considered a draft warning notice which had been framed by the Executive Committee with regard to "covering" by medical practitioners of uncertified women practising as midwives. The notice was to be accompanied by a communication from the President. The communication and notice were in the following terms.

General Council of Medical Education and
Registration of the United Kingdom,
44, Hallam-street, Portland-place, London, W.

DEAR SIR.—As President of the General Medical Council, I have been requested by that body to bring to your special attention the provisions of the Midwives Act, 1902, and the Midwives (Scotland) Act, 1915, which (in Great Britain) prohibit any woman who is not certified under one or other of these Acts from habitually and for gain attending women in childbirth, otherwise than under the direction of a qualified medical practitioner. The importance to the public welfare of the effective administration of these Acts of Parliament cannot be over-estimated.

In certain disciplinary cases which the General Medical Council have recently had to consider it has been shown that, notwithstanding the salutary provisions of the above-mentioned Acts, uncertified women have been in effect enabled to defy the law through the connivance, assistance, or connivance of qualified medical practitioners. This has been done either by practitioners paying perfunctory visits to confinement cases (attended by an uncertified woman), and signing certificates and kindred documents required by certain Acts of Parliaments—for example, in relation to National Health Insurance or Notification of Births—or by their countenancing in other ways the false pretence that the uncertified woman was acting under the direction of a qualified medical practitioner.

Conduct of this character is, in the opinion of the Council, discreditable in that it directly tends to defeat the due working of Acts of Parliament which are of the utmost importance to the welfare of the poorer classes, and therefore of the nation, particularly at the present time. The Council accordingly have issued a Warning Notice upon the subject, of which I beg leave to enclose a copy.

Your attention is called to the fact that the penal provisions of the Acts do not apply "to anyone rendering assistance in a case of emergency."

I am to add that the General Medical Council regard it as the duty of registered medical practitioners to coöperate with the constituted authorities in helping to secure the strict and effective administration of the Midwives Act.—I am, yours faithfully,

DONALD MACALISTER, President.

Draft Notice.

WHEREAS it is provided in the Midwives Act, 1902, and in the Midwives (Scotland) Act, 1915, that "no woman shall habitually and for gain attend women in childbirth otherwise than under the direction of a qualified medical practitioner unless she be certified under this Act";

And whereas it has been made to appear to the General Medical Council that certain qualified medical practitioners have, from time to time, by their countenance or assistance or by issuing certificates, notifications, or other documents of a kindred character, knowingly enabled uncertified women, on pretence that such women were under their direction, to attend women in childbirth, contrary to the law;

And whereas such conduct is, in the opinion of the Council, discreditable to the profession of medicine, and calculated to defeat the purpose of the Statutes made in the public interest for the protection of mothers and infants;

Notice is hereby given that any registered practitioner who is proved to have so off ended will be liable to have his name removed from the Medical Register.

The PRESIDENT moved that the notice should be approved and circulated.

Sir J. W. MOORE seconded.

Sir F. CHAMPNEYS pointed out the necessity of securing that the Midwives Act should be administered so as to give the benefit to the population which it was intended to afford. It had undoubtedly lowered the mortality in childbirth in a very remarkable manner, but it had been administered with varying intensity in various parts of the country. It had been fully administered in some parts and comparatively neglected in others. The Local Government Board was alive to the situation and made it quite possible for any county council that wished to do so to obtain the services of a properly qualified midwife for a district.

Dr. NEWSHOLME said that "covering" of the practice of uncertified women by medical men should no longer be permitted. The Local Government Board had promised to give one-half of the total payment which was made by the local authority in obtaining municipal and county midwives where they were required, and where an adequate supply did not exist at the present time. They had also promised one-half of the fee where doctors were summoned in emergencies by midwives. The steps which had been taken since the last meeting of the Council had been very gratifying. There was no power to compel the local authorities to act, but they were waking up to the necessity of action.

The PRESIDENT said that if a medical man was called in in an emergency to a confinement case and found that the patient was being attended by an uncertified woman and notified that fact to the local authority he had done his duty. But if he tried to conceal that fact from the authorities and filled up certificates which did not reveal it, but purported to show that he was in charge of the case, then he laid himself open to the charge.

The motion was agreed to.

Treatment of Venereal Diseases.

Dr. LANGLEY BROWNE moved:—

That the President be requested to inform the Lord President that, in the opinion of this Council (a) any legislative measures dealing with

the prevention and cure of venereal diseases, to be effective in protecting the public health, must include provisions for restraining the treatment of such diseases by unqualified persons; and (b) the recommendations of the Select Committee of the House of Commons on Patent Medicines, which have now been endorsed by the Royal Commission on Venereal Diseases, should forthwith be adopted, and embodied in the proposed legislative measures.

He said that it was imperative that the Council should take immediate action in regard to this subject. Whatever was to be done in this matter might be done very soon, and it might be too late for them to have any voice at all. Unless the enormous amount of treatment of venereal cases by unqualified persons was stopped, he did not believe that the stamping out of these diseases in the country would be possible. The Council ought to urge on the Government that it should be made a penal offence for an unqualified person to treat venereal diseases.

Dr. NORMAN MOORE seconded, and the motion was unanimously agreed to. It will be forwarded to the Home Office as well as to the Privy Council.

Restorations to Medical Register.

The names of Ulick Joseph Burke and Maurice Edmund Arnold Wallis were restored to the Register.

WEDNESDAY, NOV. 29TH.

The sitting was occupied with penal cases.

THE CONTROL OF VENEREAL DISEASES.

SOME PRACTICAL POINTS IN THE TAKING OF SPECIMENS FOR DIAGNOSIS IN VENEREAL DISEASES.

I.

THESE brief notes have been written by Mr. CLAUDE H. MILLS, assistant surgeon to St. Paul's Hospital for Skin and Genito-urinary Diseases, medical officer in charge of the syphilis wards at Rochester Row Military Hospital, 1914-16. Their object is to help those who have not hitherto had a wide experience in this specialty to arrive at an early, rapid, and accurate diagnosis.

Urethritis.—1. *Profuse discharge.*—Thoroughly cleanse the glans penis, especially the meatus, with alcohol or methylated spirit, and wipe away the first bead of discharge that exudes and collect the second at the end of a clean slide, and draw out as in the preparation of a blood film. Be careful not to make the film too thick, and not to overheat in fixing. If a specimen is required for culture it is better to take same with a wire loop from the fossa navicularis—the lips of the meatus being kept separated the while—and transfer immediately to blood agar medium. In cases complicated by phimosis it is advisable first to administer a prolonged sub-preputial irrigation (using roughly a gallon) of sterile water to remove the accumulations resulting from balanitis which is always present in varying degree. Dab preputial orifice with filter-paper till dry, and express discharge by firmly drawing a finger along under the floor of the urethra, from the bulb forwards and collect same at preputial orifice.

2. *Scanty discharge.*—When pus is unobtainable by above method a satisfactory specimen can easily be procured by using an Eyre's modification of Kelly's urethral speculum, having previously washed out the anterior inch of the compressed urethra with sterile water. This is especially valuable in procuring material for culture.

3. *Urethritis with no appreciable discharge at the meatus, but with evidence of same in urine.*—After cleansing the glans and meatus the patient should pass the morning urine direct into a sterile flask, or wide-necked bottle, without making contact with same. Giving a quarter of an hour to settle, remove sediment with pipette and transfer to centrifuge tube and thence to slide. If a centrifuge is not at hand, allow urine to stand for rather longer and transfer sediment direct to slide, remove excess of urine and slowly evaporate. Any large strands of muco-pus can be extracted from the urine with platinum loop and placed on slide for staining. The centrifuge is an advantage since time is saved and a cultural growth therefrom more readily obtainable. It should always be borne in mind that the longer gonococci remain in a stagnant urine, the more they tend to lose those characteristics by which we are able to differentiate them.

4. *Vaginal discharge.*—After a prolonged douche of boric lotion has been administered, the specimen should be taken

from pus produced by drawing a finger along the floor of the urethra. In the absence of a hymen, a speculum should now be passed and a second specimen taken from the cervix uteri. It is practically useless to take a specimen from the discharge at the vulva, such is the variety of organisms present.

To obtain serum from a chancre.—Points to be borne in mind. (a) *S. pallida* are most abundant in the margin and in the deeper layers of the base of the sore. (b) *S. refringens*, *S. gracilis*, *S. balanitidis* will only be found in the exudate and superficial layers. (c) The ideal specimen should contain a minimum of blood cells.

Procedure: To clean the surface of sore, first apply a hot compress of normal saline; this will remove the scab of dried exudate if present. It will lessen hæmorrhage, and will in no way tend to devitalise the *S. pallida*. A moist sore, surmounted with a film of necrotic debris, is first cleansed by gently dabbing with absolute alcohol and then applying compress. The chancre should now be gently squeezed between the thumb and index finger of the gloved left hand; a rolling movement often helps. After the pressure is relaxed the serum will be seen to exude. Scraping the chancre will only be resorted to should this fail, since it usually produces hæmorrhage. If for immediate examination the serum should be placed on cover-slip either by direct contact or with a wire loop and mounted for dark-ground examination. If it is to be sent to the laboratory—possibly some distance—then the serum should be collected in a finely drawn capillary tube—shaken to the centre—and the ends sealed in the flame of a Bunsen or spirit lamp, care being taken not to heat the serum. Capillary tubes are easily prepared by drawing out $\frac{1}{8}$ in. glass tubing at dull-red heat over a Bunsen or better with the bellows and flame for glass-blowing.

Lieutenant-Colonel L. W. Harrison, R.A.M.C., was the first to advocate the use of capillary tubes for this purpose. *S. pallida* will exhibit vigorous movements when put up in this manner for three days at least, and longer if the tube be kept in the dark at body temperature. I have not observed movements in *S. pallida* beyond eight days, but have seen *S. refringens* and *S. gracilis* quite active under dark-ground illumination up to the thirtieth day. The serum is easily driven out for examination on to a cover-slip by breaking one end of the capillary tube and heating from the other.

To obtain specimen by gland puncture.—Select a painlessly and discretely enlarged gland of "india-rubber" consistency, not one exhibiting the slightest tendency towards suppuration from mixed infection. I have never yet succeeded in detecting *S. pallida* in a gland showing this tendency in a syphilitic by puncture.

Procedure: Having shaved the region and painted the skin with iodine, insert exploring needle through same and transfix the gland. This can be verified by moving the gland with the needle when it is fairly impaled. One should aim at placing the point of the needle well into the centre of the gland. Affix glass syringe and now inject 5-10 minims of normal saline, gently knead the gland for about a minute, and then slowly aspirate. The object of the saline solution is to clear the needle, and create a cavity, as it were, in which the point rests. Without the previous injection of fluid the needle becomes occluded by gland substance immediately negative pressure is applied. I have obtained far more gratifying results since I first devised this simple procedure. Release the suction before withdrawing the point of needle from the gland. This method provides sufficient fluid for several slides for dark-ground or other examinations, or for putting up in capillary tubes.

To obtain specimen from secondary syphilides of the skin.—Gently remove the epidermis over a macule or papule or the crust from a papulo-pustule with a spud, avoiding hæmorrhage. Compress with hot saline and apply vacuum with suitable-sized Bier's cup (heated test-tube or soda-water bottle answers equally well) to lesion for five minutes. Gentle squeezing after removing the cup will give sufficient serum for examination. With an erythematous or roseolar rash blistering with liq. epispasticus overnight (the area should be covered with a pill-box to protect blister when formed) will provide ample clear serum for diagnostic purposes.

In taking specimens from lesions in the mouth and pharynx.—Here it is a wise precaution to wear goggles. Specimens taken should always be examined immediately where possible, since *S. microdentium*, which is so commonly present, is much more easily distinguished from *S. pallida* whilst alive and exhibiting vigorous movements. If circumstances necessitate the sending of a specimen to the laboratory, a warning

should be given to the bacteriologist as to its source. It is always more advisable to send a fluid specimen in a capillary tube than a dry film, because even when the spirochaetes are dead it is possible for a microscopist, experienced in this work, to give an opinion with the dark-ground illumination. In a dry preparation it is practically impossible to distinguish between *S. microdentum* and *S. pallida* by staining methods, especially with the ground stains (Burri's, Harrison's, Congo red, &c.).

Taking specimens from the female: labial, glossal, and faucial lesions.—These can usually be thoroughly cleaned up, thereby rendering the presence of the microdentium—a surface contamination—less probable. Faucial lesions should receive a preliminary cleansing by prolonged gargling with plain hot water. The specimen is obtained by gentle scraping with a blunt triangular spud. This always requires dilution with normal saline before immediate examination or transference to a capillary tube.

Taking blood for Wassermann test.—A very convenient method is that employed in the Guy's Hospital Laboratory—viz., of receiving the blood into a test-tube fitted with a cork drilled with two holes. Into the one is fitted a 2-inch length of glass tubing, to which the needle for venipuncture is attached by a 6-inch length of rubber tubing. The other hole is merely to allow for the escape of air whilst the blood is flowing into the test-tube when the vein is punctured. This simple device obviates the spilling of even a drop of blood. It is easily sterilised. The sterile test-tube or other receptacle should always be moist within (steamed); this prevents clot clinging to sides, which frequently happens if tube is dry-sterilised. Send the serum only if specimen has to travel through the post in sealed ampoule. I would always advocate taking the blood by venipuncture, because (1) it provides practice in the puncturing of a vein, (2) ample serum is thus provided for one or more modifications of the test, or should an accident happen during the performance of same.

Lumbal puncture.—With few exceptions this can always be performed with little or no discomfort to the patient under local anaesthesia (preferably eucaine lact. 2 per cent., which is, unfortunately, now almost prohibitive). First infiltrate an area of skin to the size of a shilling exactly over the interspace selected. Now inject into the subcutaneous tissues, and lastly into the supraspinous and interspinous ligaments; 5 c.c. of solution will accomplish this. In making the puncture special care should be taken after perforating the ligamentum subflavum not to drive the point of the needle right across the canal, thereby impinging nerve fibres up against the anterior wall. Allow at least 2 c.c. of cerebro-spinal fluid to escape before collecting that required for examination, which should be as free from contamination with blood as possible. It is a good plan, therefore, to receive the fluid into a first and second test-tube and labelling them (a) and (b). The cytological examination and globulin estimation should be done at once; the Wassermann test, of course, can wait.

(To be continued.)

THE LONDON AND HOME COUNTIES SCHEME.

The Public Health Committee of the London County Council submitted their scheme for the diagnosis and treatment of venereal diseases to the Council last week. The scheme is a large one, as it includes the County of London (leaving out the City), the counties of Buckingham, Essex, Hertford, Kent, Middlesex and Surrey, and the county boroughs of Croydon, East Ham, and West Ham. For providing treatment centres and examining specimens sent for diagnosis from all these areas, provisional arrangements have been made with 11 out of 12 of the metropolitan hospitals with attached medical schools, and in addition with 4 other general and 6 special hospitals: The Great Northern Central, Miller General, Seamen's, West London; the New Women's, the South London Hospital for Women, the Great Ormond-Street Hospital for Sick Children, the Lock Hospital, St. John's Hospital (Leicester-square), and St. Paul's Hospital (Red Lion-square). Laboratory provision for Miller General and St. Paul's Hospitals will be made at two other hospitals. Kent County makes its own arrangements for pathological examinations. St. Bartholomew's Hospital remains with the City Corporation outside the scheme. The governing body of each hospital concerned is to appoint a committee from its staff to draft a scheme to

carry out the special work, and when this scheme is approved to organise and superintend the arrangements, which include the provision of staff, of beds, of out-patient facilities, the supply of salvarsan, &c. to practitioners, the examination of specimens, and the provision of teaching facilities. Provision is to be made for the employment of some medical practitioners as clinical assistants and of some women doctors in clinics for women, while patients, if they are willing, are to be referred to their own doctors for continued treatment. The contribution of the various participating authorities to the cost of the scheme, which is estimated at £49,000 for a year, will be on the basis of estimated population. The scheme is to come into operation for an experimental year on Jan. 1st, 1917.

A deputation from the Metropolitan Counties Branch of the British Medical Association conferred on Nov. 23rd with the Public Health Committee on the form of the draft scheme before submission for acceptance to the County Council. Mr. E. B. Turner, Mr. W. H. F. Oxley, and Mr. Bishop Harman, representing the Branch Council, expressed their agreement with the general principles of the scheme indicating certain desirable modifications, in particular that in the new clinics a due proportion of general practitioners residing in the locality of the hospitals concerned should be appointed as clinical assistants. The chairman of the Public Health Committee replied that note would be taken of the points raised, some of which were already under contemplation.

CONFERENCE OF THE ASSOCIATION FOR MORAL AND SOCIAL HYGIENE.

A conference of social workers, including a certain number of Members of Parliament, medical men, and lawyers, met recently at the Caxton Hall, at the instance of the Association for Moral and Social Hygiene, to consider the control of venereal diseases, as now being undertaken. A discussion of the notification of these diseases elicited the view from the meeting, at which a number of women's organisations were represented, that any measures to this end should be applied impartially to the whole population, their probable direction, so far as any existing proposals went, being only or mainly towards women of immoral life. A resolution was carried recording the approval of the arrangements now to be made by the local authorities throughout the country "for the efficient free and confidential treatment of venereal disease without penal or deterrent conditions." The meeting endorsed at the same time the opinion of the Royal Commission that if venereal diseases are to be stamped out the moral standards of the community as a whole must be raised, and considered that both sexes should be treated equally in matters of public morals.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments have been notified:—Temporary Surgeons: R. B. Adams and S. Wilson to the *Virid*. J. G. A. Fairbank to be temporary Surgeon.

ARMY MEDICAL SERVICE.

Colonel H. E. Cree is retained on the Active List under the provisions of Articles 120 and 522, Royal Warrant for Pay and Promotion, and to be supernumerary.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel R. Holyoake is retained on the Active List under the provisions of Articles 120 and 522, Royal Warrant for Pay and Promotion, and to be supernumerary.

Major D. K. Smith, C.A.M.C., to be temporary Lieutenant-Colonel.

To be temporary Majors: H. J. Shirley and R. E. Crosse. Temporary Lieutenants to be temporary Captains: M. Eager, A. Budd, M. J. Casserley, R. M. Wright, J. H. Legge, A. Muir, W. J. Macdonald, J. W. Frew, R. W. Stocks, F. Ritchie, T. M. Crawford, W. Hornsby, D. G. McRae, B. McDermott, F. Vause, W. G. S. Neely, J. St. P. Knight, G. S. Marshall, J. McMillan, A. Dick, A. R. Snowdon, J. K. F. MacLeod, W. P. Ker, J. F. Robertson, T. F. O'Kell, J. N. Meade, J. W. Bride, W. S. Edmond, D. Villiesid, W. M. Shepherd, D. Mann, A. F. Elliott, F. J. Ayre, D. R. Pike, J. McA. Scott, E. L. Matthaw, W. A. Rees, R. S. Dickie, R. Forbes, D. S. Jones, H. K. Macdonald, C. C. Lord, C. C. Vigurs, W. Jameson, C. Bannigan, W. A. Ferguson, J. MacRae, T. H. Edey, W. D. Newland, C. E. Wilson, F. B. Julian,

J. A. R. Thompson, W. G. F. Johnson, A. C. Taylor, R. E. Thomas, E. P. Titterton, P. C. H. Ryan, M. L. Loveless, R. W. P. Jackson, R. T. Todd, W. R. P. McNeight, J. Ogilvie, A. E. Schokman, E. W. N. Wooler, A. G. H. Moore, S. McNair, J. Crawford, W. F. Walker, R. W. Macpherson, J. M. Ryan, L. S. C. Roche, A. Rutherford, T. C. Routley, D. W. F. Jones, L. T. Burra, C. C. Brewis, C. O. Jones, H. D. Woodroffe, G. Elmsworth, G. H. H. Russell, L. M. Webber, V. H. L. MacSwiney, A. R. Oram, A. B. Cardew, C. D. Walker, T. J. Ryan, A. E. Sutton, T. F. Saunders, D. McE. Kilgour, A. E. McKibbin, D. A. Warren, W. A. McLeod, C. R. Young, E. Bryceon, L. M. Breton, J. R. R. Ritchie, H. Tomlin, T. B. Williams, G. A. McLarty, W. B. Seaton, R. Home, H. Bourne, R. S. Jenkins, A. H. Morley, L. J. H. Oldmeadow, P. M. Turnbull, E. F. Reeve, R. E. H. Leach, G. W. Bereford, J. E. R. Orchard, E. D. Lindow, W. Bainbridge, E. R. Barton, K. G. Gordon, F. J. Lidderdale, J. R. Christian, A. Montgomery, W. D. Rose, D. F. O'Flynn, J. D. Dods, I. Flack, and H. D. Haworth.

To be temporary Captains: F. A. Anderson and C. H. Denham.

To be temporary Lieutenants: A. H. Burnett, S. J. McClean Bradshaw, C. G. T. Mosse, W. C. P. Barrett, R. Paul, J. T. W. Stewart, P. C. Prince, H. R. Grellet, A. H. Porter, I. Clarke, D. Cogan, B. H. Moore, T. F. Campbell, C. M. Roberts, W. L. Walker, Temp. Hon. Lieut. J. Fanstone, J. B. Ferguson, H. Kirkland-Whittaker, J. Bain, T. B. Stedman, Temp. Hon. Lieut. G. E. Spicer, F. O. Spensley, H. E. M. Baylis, H. D. Pollard, and A. Neville.

Temporary Captains relinquishing their commissions: W. M. Crofton, G. D. Laing, J. Spence, T. A. Rothwell, H. Meade, C. H. Treadgold, S. H. Gibson, P. C. Raiment, W. S. Milne, B. N. Murphy, A. de W. Snowden, A. G. Leitch, W. W. Mackarell, R. F. Yencken, J. C. Watson, H. B. Elton, C. W. B. Littlejohn, J. H. Dancy, C. H. H. Coetzee, and C. N. Le Brocq. W. A. Russell (on account of ill-health).

Temporary Lieutenants relinquishing their commissions:—A. M. Drennan, J. R. Boyd, P. H. Lang, G. Kirkwood, J. A. Pierce, G. S. Gordon, W. B. Drummond, S. F. A. Charles, G. F. Hegarty, F. S. Adams, S. C. Shanks, A. N. Haig, E. A. Bernard, R. C. L. Batchelor, S. W. McComb, J. Broomhead, A. F. G. Guinness, J. Raffan, H. Newsome, V. A. Chatelaine, R. G. Allen, T. H. Gibbs, E. W. S. Hughes, H. A. Lane, H. Topham, A. F. Fell, W. J. Chapman, H. E. Thomas, and J. S. Mitchell. E. D. Fountain (on account of ill-health).

SPECIAL RESERVE OF OFFICERS.

Lieutenants on probation confirmed in their rank: R. C. B. Ramsay and M. McG. Russell.

To be Lieutenants: W. J. M. White, from Glasgow University Contingent, O.T.C.; G. E. L. Simons, P. T. Jones, A. Rodd, L. Cunningham, F. N. Sidebotham, G. Day, T. B. Bailey, R. Moser, I. Aubrey, H. J. Duske, W. S. Brown, G. M. Kendall, L. Grey, and R. G. Simpson, from the University of London Contingent, O.T.C.; E. O. Goldsmith, R. B. Hawes, and D. V. Murphy.

Major (Temp. Lieut.-Col.) J. H. P. Graham relinquishes his temporary rank on reposting.

Captain J. G. Wilson relinquishes his commission on account of ill-health.

TERRITORIAL FORCE.

London Casualty Clearing Station: Major F. W. Higgs to be Lieutenant-Colonel.

Lowland Field Ambulance: Major A. M. McIntosh, M.B., to be Lieutenant-Colonel and remain seconded whilst acting Assistant Director of Medical Services.

Yorkshire Mounted Brigade Field Ambulance: Major G. H. L. Hammerton to be temporary Lieutenant-Colonel whilst commanding a field ambulance.

Home Counties Casualty Clearing Station: Lieut. A. Wilson to be Captain.

London Field Ambulance: Capt. (temporary Major) J. H. Dixon to be Major.

Northumbrian Field Ambulance: Lieut. V. J. White to be Captain.

London Sanitary Company: Herbert Leopold Farmer to be Lieutenant.

TERRITORIAL FORCE RESERVE.

Major W. B. Mackay, C.M.G., from Attached to Units other than Medical Units, to be Major.

Captain J. H. Baldwin, from 1st London Sanitary Company, to be Captain.

DEATHS IN THE SERVICES.

Colonel Ernest Harold Fenn, C.I.E., late R.A.M.C., at Hagley, Worcestershire, on Nov. 24th, aged 66. He joined the Army Medical Staff in 1875 and later served with Lord Roberts's relief force to Kandahar (mentioned in despatches). He took part in the Sudan campaign in 1885, and eight years later with Sir Mortimer Durand's mission to Kabul (received the thanks of the Government of India). He afterwards served on the staffs of Lord Lansdowne and Lord Curzon in India.

VITAL STATISTICS.

VITAL STATISTICS OF LONDON DURING OCTOBER, 1916.

IN the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the 10 diseases specified in the table was equal to an annual rate of 5.4 per 1000 of the civil population, estimated at 4,310,030 persons in the middle of the year; in the three preceding months the rates had been 4.9, 4.0, and 4.9 per 1000 respectively. The lowest rates during the month were recorded in Kensington, the City of Westminster, Hampstead, Wandsworth, Lewisham, and Woolwich; and the highest rates in Holborn, the City of London, Bethnal Green, Stepney, Bermondsey, Deptford, and Greenwich. The prevalence of scarlet fever showed a slight increase over that recorded in the preceding month; this disease was proportionally most prevalent in Holborn, the City of London, Shoreditch, Poplar, Bermondsey, and Deptford. The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals at the end of October was 1117, against 991 and 1007 at the end of the two preceding months; the weekly admissions averaged 160, against 120 and 143 in the two preceding months. Diphtheria was more prevalent than it had been in any of the seven preceding months; the greatest proportional prevalence during October was recorded in Fulham, Finsbury, the City of London, Bethnal Green, Stepney, Southwark, Deptford, and Greenwich. The Metropolitan Asylums Hospitals contained 1479 diphtheria patients at the end of the month, against 1236 and 1287 at the end of the two preceding months; the weekly admissions averaged 209, against 135 and 167 in the two preceding months. The prevalence of enteric fever showed no variation from that recorded in September; the greatest prevalence of this disease in October was recorded in Paddington, Chelsea, St. Pancras, Hackney, Holborn, Stepney, and Wandsworth. There were 39 enteric fever patients under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 35 in each of the two preceding months; the weekly admissions averaged 7, against 5, 5, and 7 in the three preceding months. Erysipelas was proportionally most prevalent in Kensington, Shoreditch, Bethnal Green, Stepney, Southwark, and Bermondsey. The 22 cases of puerperal fever notified during the month included 3 in St. Pancras, and 2 each in Fulham, the City of Westminster, Bethnal Green, Southwark, and Woolwich. The 16 cases of cerebro-spinal meningitis included 2 each in Kensington, Islington, Bethnal Green, Lambeth, and Camberwell. Of the 23 cases of poliomyelitis, 5 belonged to Camberwell, 4 to St. Pancras, 3 to Stoke Newington, 3 to Southwark, 3 to Bermondsey, and 2 to the City of Westminster.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several metropolitan boroughs, the deaths occurring in institutions having been distributed among the several metropolitan boroughs in which the deceased persons had previously resided. During the four weeks ending Oct. 28th the deaths of 3962 London residents were registered, equal to an annual rate of 12.0 per 1000, against 10.7, 10.6, and 12.0 per 1000 in the three preceding months. The death-rates during the month ranged from 6.7 in the City of London, 7.5 in Hampstead, 8.2 in Lewisham, 9.5 in Wandsworth, 10.1 in Camberwell, and 10.4 in St. Marylebone, to 13.1 in Deptford, 13.2 in Bethnal Green, 13.3 in Poplar, 14.5 in Shoreditch, 14.8 in Holborn and in Southwark, 16.0 in Bermondsey, and 16.8 in Finsbury. The 3962 deaths from all causes included 333 which were referred to the principal infectious diseases; of these, 26 resulted from measles, 11 from scarlet fever, 45 from diphtheria, 5 from whooping-cough, 10 from enteric fever, and 236 from diarrhoea and enteritis among children under 2 years of age. No death from any of these diseases was recorded in Stoke Newington, Holborn, or the City of London; among the other boroughs they caused the lowest death-rates in Hammersmith, Hampstead, and Lewisham, and the highest rates in Finsbury, Bethnal Green, Southwark, and Bermondsey. The 26 fatal cases of measles were 37 fewer than the corrected average number in the corresponding period of the five preceding years; these 26 cases included 4 in Southwark, 3 in St. Pancras, 3 in Bermondsey, 3 in Woolwich, 2 in Poplar, and 2 in Camberwell. The 11 deaths from scarlet fever were 6 below the corrected average number, and included 3 in Stepney and 2 in Lambeth. The 45 fatal cases of diphtheria showed a decline of 11 from the corrected average; these 45 deaths included 5 in Islington, 5 in Lambeth, 4 in Bermondsey, 4 in Deptford, 3 in Fulham, 3 in Southwark, and 3 in Wandsworth. The 5 deaths from

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING OCTOBER, 1916.
(Specially compiled for THE LANCET.)

| CITIES AND BOROUGHES. | Estimated civil population, 1915. | NOTIFIED CASES OF INFECTIOUS DISEASE. | | | | | | | | | | | DEATHS FROM PRINCIPAL INFECTIOUS DISEASES. | | | | | | | | | | | Deaths from all causes. | Death-rate per 1000 living. |
|---------------------------|-----------------------------------|---------------------------------------|----------------|--------------|---------------|----------------|-------------------------|------------------|-------------|----------------------------|---------------|--------|--|------------|----------|----------------|--------------|-----------------|----------------|--|--------|--------------------------------------|------|-------------------------|-----------------------------|
| | | Small-pox. | Scarlet fever. | Diphtheria.* | Typhus fever. | Enteric fever. | Other continued fevers. | Puerperal fever. | Erysipelas. | Cerebro-spinal meningitis. | Polymyelitis. | Total. | Annual rate per 1000 persons living. | Small-pox. | Measles. | Scarlet fever. | Diphtheria.* | Whooping-cough. | Enteric fever. | Diarrhoea and enteritis (under 2 years). | Total. | Annual rate per 1000 persons living. | | | |
| LONDON... .. | 4,310,030 | — | 623 | 824 | — | 43 | 1 | 22 | 219 | 16 | 28 | 1776 | 5.4 | — | 26 | 11 | 45 | 5 | 10 | 236 | 333 | 1.0 | 3962 | 12.0 | |
| <i>West Districts.</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| Paddington | 131,397 | — | 22 | 23 | — | 3 | — | — | 8 | 1 | 1 | 58 | 5.8 | — | — | — | — | — | 1 | 9 | 10 | 1.0 | 114 | 11.3 | |
| Kensington | 155,795 | — | 10 | 14 | — | 1 | — | — | 13 | 2 | — | 40 | 3.3 | — | — | 1 | — | — | — | 8 | 12 | 1.0 | 152 | 12.7 | |
| Hammersmith | 118,559 | — | 17 | 18 | — | — | — | — | 1 | 3 | — | 39 | 4.3 | — | 1 | — | — | — | — | 2 | 3 | 0.3 | 105 | 11.5 | |
| Fulham | 151,161 | — | 23 | 38 | — | — | — | — | 2 | 8 | — | 72 | 6.2 | — | 1 | 1 | 3 | — | — | 12 | 17 | 1.5 | 134 | 11.6 | |
| Chelsea | 58,421 | — | 8 | 9 | — | 4 | — | — | 4 | — | — | 25 | 5.6 | — | — | — | 1 | — | — | 2 | 3 | 0.7 | 58 | 12.9 | |
| City of Westminster ... | 135,104 | — | 9 | 14 | — | 2 | — | 2 | 3 | — | 2 | 32 | 3.1 | — | — | — | 2 | — | 1 | 3 | 6 | 0.6 | 125 | 12.1 | |
| <i>North Districts.</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| St. Marylebone | 100,260 | — | 12 | 16 | — | — | — | — | 6 | — | — | 34 | 4.4 | — | — | — | 1 | — | 1 | 3 | 5 | 0.7 | 80 | 10.4 | |
| Hampstead | 81,760 | — | 10 | 4 | — | — | — | — | — | — | — | 18 | 2.9 | — | — | — | — | — | 1 | 1 | 1 | 0.2 | 47 | 7.5 | |
| St. Pancras | 209,322 | — | 21 | 33 | — | 5 | — | 3 | 7 | — | 4 | 73 | 4.8 | — | 3 | — | — | — | 1 | 7 | 11 | 0.7 | 173 | 11.3 | |
| Islington | 316,242 | — | 41 | 60 | — | 2 | — | 1 | 10 | 2 | 1 | 117 | 4.8 | — | 1 | 1 | 5 | — | 1 | 15 | 23 | 0.9 | 302 | 12.4 | |
| Stoke Newington... .. | 50,527 | — | 6 | 12 | — | — | — | — | 3 | — | 3 | 25 | 6.4 | — | — | — | — | — | — | 2 | 3 | 0.7 | 47 | 12.1 | |
| Hackney | 217,883 | — | 28 | 27 | — | 3 | — | 1 | 13 | 1 | — | 73 | 4.4 | — | — | — | 1 | — | — | 10 | 11 | 0.7 | 193 | 11.5 | |
| <i>Central Districts.</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| Holborn | 40,405 | — | 8 | 9 | — | 3 | — | — | 2 | 1 | — | 23 | 7.4 | — | — | — | — | — | — | 10 | 11 | 1.9 | 46 | 14.8 | |
| Finsbury | 76,915 | — | 13 | 21 | — | — | — | — | 4 | — | 1 | 39 | 6.6 | — | 1 | — | — | — | — | — | — | — | 99 | 16.8 | |
| City of London | 19,461 | — | 4 | 5 | — | 1 | — | — | 1 | — | — | 11 | 7.4 | — | — | — | — | — | — | — | — | — | 10 | 6.7 | |
| <i>East Districts.</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shoreditch | 103,627 | — | 21 | 24 | — | — | — | — | 9 | 1 | 1 | 56 | 7.0 | — | — | — | — | — | — | 12 | 12 | 1.5 | 115 | 14.5 | |
| Bethnal Green | 120,207 | — | 23 | 37 | — | 2 | — | 2 | 1 | 2 | 1 | 78 | 8.5 | — | 1 | 1 | — | — | — | 14 | 17 | 1.8 | 122 | 13.2 | |
| Stepney | 265,731 | — | 50 | 74 | — | 5 | 1 | 1 | 22 | — | — | 153 | 7.5 | — | 1 | 3 | 2 | 1 | 1 | 20 | 23 | 1.4 | 251 | 12.8 | |
| Poplar | 156,247 | — | 33 | 26 | — | — | — | — | 11 | 1 | — | 71 | 5.9 | — | 2 | — | 2 | 1 | — | 10 | 15 | 1.3 | 160 | 13.3 | |
| <i>South Districts.</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| Southwark | 179,424 | — | 24 | 44 | — | 1 | — | 2 | 14 | — | 3 | 88 | 6.4 | — | 4 | — | 3 | — | 1 | 21 | 29 | 2.1 | 204 | 14.8 | |
| Bermondsey | 117,188 | — | 25 | 27 | — | 1 | — | — | 12 | — | 3 | 68 | 7.6 | — | 3 | — | 4 | — | 1 | 16 | 24 | 2.7 | 144 | 16.0 | |
| Lambeth | 284,188 | — | 48 | 54 | — | 2 | — | 1 | 5 | 2 | — | 112 | 5.1 | — | 1 | 2 | 5 | — | — | 17 | 25 | 1.1 | 273 | 12.5 | |
| Battersea | 161,945 | — | 22 | 30 | — | 1 | — | — | 6 | — | 1 | 60 | 4.8 | — | 1 | 1 | 2 | — | — | 8 | 12 | 1.0 | 158 | 12.7 | |
| Wandsworth | 312,249 | — | 46 | 35 | — | 3 | — | 1 | 7 | — | — | 92 | 3.8 | — | 1 | 1 | 3 | — | 1 | 8 | 14 | 0.6 | 227 | 9.5 | |
| Camberwell | 254,385 | — | 37 | 37 | — | 1 | — | 1 | 13 | 2 | 5 | 96 | 4.9 | — | 2 | — | — | 2 | 1 | 9 | 14 | 0.7 | 198 | 10.1 | |
| Deptford | 110,299 | — | 24 | 36 | — | 1 | — | — | 7 | 1 | — | 69 | 8.2 | — | — | — | 4 | — | 1 | 5 | 10 | 1.2 | 111 | 13.1 | |
| Greenwich | 96,385 | — | 5 | 53 | — | 1 | — | 1 | 2 | — | 1 | 63 | 8.5 | — | — | — | 1 | — | — | 8 | 9 | 1.2 | 91 | 12.3 | |
| Lewisham | 164,438 | — | 17 | 28 | — | — | — | — | 5 | — | — | 50 | 4.0 | — | — | — | — | — | 2 | 3 | 0.2 | 103 | 8.2 | | |
| Woolwich | 129,505 | — | 16 | 16 | — | 1 | — | 2 | 6 | — | — | 41 | 4.1 | — | 3 | — | 1 | — | — | 4 | 8 | 0.8 | 110 | 11.1 | |
| Port of London | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | |

* Including membranous croup.

whooping-cough were only one-seventh of the corrected average number; 2 occurred in Kensington and 1 each in Stepney, Poplar, and Camberwell. The 10 fatal cases of enteric fever were 6 below the corrected average; they belonged respectively to Paddington, the City of Westminster, St. Marylebone, St. Pancras, Islington, Stepney, Southwark, Bermondsey, Wandsworth, and Deptford. The deaths from

diarrhoea and enteritis among children under 2 years of age were 149 below the average; the greatest proportional mortality from this cause was recorded in Finsbury, Shoreditch, Bethnal Green, Southwark, and Bermondsey. In conclusion, it may be stated that the aggregate mortality in London during October from these principal infectious diseases was 41.9 per cent. below the average.

Obituary.

ADAM ROBERT TURNBULL, M.B., C.M. EDIN.

THE sudden death from cerebral hæmorrhage of Dr. A. R. Turnbull occurred on Nov. 17th at Colinton, near Edinburgh, where he had lived since his retirement from the post of medical superintendent of the Fife and Kinross District Asylum. He was 62 years of age.

Adam Robert Turnbull was a successful student at the University of Edinburgh, taking high places in his classes and gaining no less than ten medals as an undergraduate. He graduated M.B., C.M. in 1875 with first-class honours the Ettles scholarship, and became a resident physician in the Royal Infirmary. In 1876 he was appointed an assistant physician in the Royal Asylum, Morningside, under the late Sir Thomas Clouston. He here acquired a knowledge of asylum administration and the care of the insane, and succeeded Dr. Brown as medical superintendent of the Fife and Kinross Asylum at Springfield in 1881. He occupied this post and discharged its duties to the entire satisfaction of the district board till February, 1915, when he retired on a pension.

Dr. Turnbull was a highly valued member and officer of the Medico-Psychological Association. He was in 1910 chosen president of the association, but was obliged, owing to the state of his health, to resign the honour before it

became necessary to undertake its active duties. He was largely responsible for the modern method of caring for insane sick male patients by the employment of female nurses entirely. In a new hospital which the District Lunacy Board were building in 1895 Dr. Turnbull designed a special sick room with easy supervision for this purpose. The arrangements were on a modest scale, and females were employed by day only, but the success of this departure formed the beginning of a great movement which, under the fostering care of the Board of Lunacy, spread over Scotland. Since the war began it has been adopted over the whole kingdom, adding to the comfort and well-being of the insane and to the military strength of the Empire by liberating male attendants from sickroom duties.

In his younger days he took a keen interest in cricket and was himself a capital batsman. Latterly he was fond of shooting and spent part of the autumn in Northumberland for that purpose. Shortly after going to Fife he married Miss Georgina Hughes, of Middleton Hall, Northumberland, who predeceased him many years ago.

A friend has sent us the following appreciation of Dr. Turnbull:—

Although possessing great intellectual gifts, Turnbull was of a retiring and unassuming disposition, and his rich stock of knowledge was never displayed for show or effect. His friends could, however, always depend upon getting from him thoughtful views on most subjects and sound judgment in difficulties of all kinds. He was a hard worker all his

life, as well as an efficient and a most conscientious one. It was characteristic of him that some years ago he should be found during an official visit at his post carefully discharging his duties when very seriously ill. Since then he has been a semi-invalid and he bore his afflictions with patience and fortitude. In private life Turnbull was a most gentle and amiable man, beloved by all and without an enemy. His consideration, often approaching deference, for the views and feelings of others was a perpetual lesson in courtesy and self-denial.

Correspondence.

"Audi alteram partem."

THE ETHICAL STANDARDS OF PANEL PRACTICE.

To the Editor of THE LANCET.

SIR,—All those who have read in your columns Dr. Mitchell Bruce's inspiring address to medical students must be glad to have noticed his assurance in a later issue that his somewhat obscure reference to the "panel" was not meant to bear the interpretation that some of your correspondents seem to have feared, and others to have hoped, that it bore. Even as amplified by his recent letter, Dr. Mitchell Bruce's warning to intending students cannot, I am afraid, be regarded as altogether free from offence to the section of the profession who are working under the National Insurance Act.

I have been closely associated with a large number of such men since the inception of panel practice, and I am bound to say that I see no evidence that a higher proportion of these medical practitioners are actuated by purely commercial motives than may be found, shall we say, amongst consulting physicians and surgeons. Dr. Mitchell Bruce says he had not panel practitioners in his mind when he deplored that he had good authority for saying that the panel as a public service has increased the instances of men entering the profession simply and solely to make a living out of it. But it is difficult to imagine what other basis his "good authority" can have had for his calculations. Dr. Mitchell Bruce has, I think, been misled by his authority, and I merely intervene to deplore the recent tendency for those who desire to promote or prevent changes in the methods of remuneration of the profession to make hints that such changes will cause improvement or deterioration in professional ethics. The highest ethical aim may actuate the man who takes a sixpenny fee in a surgery in the slums no less than the man who receives a cheque for a hundred guineas after a surgical operation. There will be men entering the medical profession "simply and solely to make a living out of it," whether the method of remunerating our services be a whole-time salary, a capitation payment, or a separate fee for every service rendered.

It is unfortunate that prominent members of the profession should provide material which enables unfriendly critics of medical practice to impugn our motives. It should be possible for our teachers to endeavour to inspire those who are entering medicine with the highest professional aims without running any risk of seeming to cast aspersions upon the motives of others.—I am, Sir, yours faithfully,

LAURISTON E. SHAW.

Park-square West, N.W., Nov. 26th, 1916.

ARE THE CLOTHES OF CANCER CASES SAFE FOR FURTHER USE?

To the Editor of THE LANCET.

SIR,—I have two patients with inoperable cancer of the cervico-thoracic region who have inherited and worn the clothes of relatives who died from similar growths in similar local positions, the one six years ago and the other eight. In the latter case the patient exhibits a striking replica of his late brother's growth. The absence of any weighty opinion in support of some definite interim procedure obstructs the carrying out of hygienic measures in dealing with cancer that are employed in conditions which are in many other respects the same. People are not willing to sacrifice the property of relatives who have died from a disease which they

have been assured is solely due to "eating meat," or to "chronic irritation," or to a "birth-cell gone wrong."

There is no bacteriological proof that "cancer" is actually associated with a microbe. But clinically one gets abundant evidence of a something which superimposes itself upon tissues that have become devitalised through having had to carry on a lengthy state of warfare with certain chronic bacteria, playing the rôle of forerunner to more virulent microbes. Not only has a bacterial preparing of the way (by some such herald as that which is responsible for fibrositis) been a feature in every case that has occurred within my own practice during recent years, but also every local alleviation that I have managed to obtain has been thanks to the help of a remedy possessing bactericidal properties.

Personally, I have never seen a cancer case without sepsis somewhere, and as I do not consider sepsis from such a source to be free from the suspicion of harbouring the greater evil, I always make use of the argument in instituting a sanitary régime.

I am, Sir, yours faithfully,

Upper Brook-street, W., Nov. 13th, 1916.

ETTIE SAYER.

GRAVES'S DISEASE AND ELECTRICAL TREATMENT.

To the Editor of THE LANCET.

SIR,—May I be allowed to correct a printer's error in my letter on this subject in your issue of Nov. 25th? A sentence dealing with cerebral galvanism is there made to read as follows: "The positive pole is placed over the forehead and the negative on the back of the neck, and the patient holds a long bar covered with lint in both hands." The "and" after "neck" should read "or," the negative pole being held in the hands as an alternative to placing it on the back of the neck.—I am, Sir, yours faithfully,

F. HERNAMAN-JOHNSON.

Cavendish-square, W., Nov. 25th, 1916.

Dr. Edward Hasell, formerly one of Lister's house surgeons at King's College Hospital, and for 20 years superintendent of the Provincial Hospital at Victoria, B.C., has been appointed medical superintendent of the Convalescent Home for Returned Soldiers recently established by the Dominion Government in the old Royal Naval Hospital at Esquimalt and of its branches all over British Columbia and the Yukon. At a recent meeting of the Provincial Hospital Board Dr. Hasell's resignation was received with regret, and an appreciation of his "invaluable work and unfailing courtesy" was recorded in an address and presented to him, accompanied by a special honorarium.

A CONTROL BOARD TAVERN.—The Central Control Board (Liquor Traffic) have recently acquired the licences of four public-houses in the neighbourhood of the Small Arms Works at Enfield Lock, and on Monday last the first of these, the Greyhound Tavern, was opened by the Minister of Munitions, the Right Hon. E. S. Montagu, M.P. The inauguration was practical, for a menu was provided, and the men from the works sat down at midday to a substantial repast at a modest cost. The meal occupied less than half an hour, and general satisfaction was expressed with the arrangements. This departure will be watched with the greatest interest, as it promises to wipe out the reproach, too often justified, against the average public-house in this country, that it exists to supply liquor and has no attraction in the way of solid refreshment or social benefits.

IRISH DOCTORS OF MILITARY AGE.—A new phase has been reached in the controversy between the guardians of Omagh and Letterkenny and the Local Government Board for Ireland in regard to the appointment to positions in the Poor-law medical service of doctors of military age. At Letterkenny the Board refused to sanction either permanently or temporarily the appointment of a doctor 21 years of age, and threatened to surcharge the guardians in respect of payments made to him. The Letterkenny guardians have now questioned the legality of the position taken by the Board and consulted counsel on the matter. Mr. Denis Henry, K.C., M.P., has advised them as follows: "In my opinion the power claimed by the Local Government Board to reject the duly elected medical officer on the ground of his being of military age is not warranted by any legal principle"; adding that he "can find no provision enabling the Local Government Board to put a penalty in Ireland on any medical man over 21 years." He further has advised the Letterkenny guardians to hold a new election to the permanent office and to let the nominee proceed to discharge his duties with or without the approval of the Board. The guardians have decided to follow this advice.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Killed.

- Capt. H. Begg, R.A.M.C., was educated at Marischal College, Aberdeen, and qualified in 1903. He practised in the Aberdare Valley for two years, and afterwards came to Kentish Town, London, and was at one time clinical assistant at the Great Northern Central Hospital and Mount Vernon Chest Hospital. He joined the R.A.M.C. in April last year, and went to France the next month.
- Capt. I. A. Clarke, R.A.M.C., attached Dorset Regiment, was educated at Edinburgh University, and qualified in April of last year. When the war broke out he was a medical student in his final year, and joined the Red Cross, seeing service abroad. After a few months he came home and qualified, and went back with a field ambulance, and later was transferred to the Dorset Regiment.
- Capt. I. M. Brown, R.A.M.C., attached Royal Field Artillery, was educated at St. Paul's School and Downing College, Cambridge, and was a student at the London Hospital, qualifying in 1914. On the declaration of war he joined the R.A.M.C., and was invalided home from Gallipoli in June, 1915. Later he went to France, and was attached to the New Zealand Division, and afterwards to the Royal Field Artillery.
- Surgeon J. S. Ward, R.N., qualified at Edinburgh in 1907 and practised for a time in Manchester, joining the Royal Navy in 1910.
- Surgeon G. A. Walker, R.N., was educated at Epsom College and at the London Hospital, and qualified in 1912. He had held the appointment of house surgeon at the Royal Infirmary, Sheffield, and volunteered for service at the outbreak of the war, doing duty at Cromarty, Gallipoli, Tenedos, and elsewhere.

Died of Wounds.

- Lieut.-Col. H. B. Connell, R.A.M.C., was educated at Birmingham University, and qualified at Edinburgh in 1902. He had held the appointment of house surgeon at the Birmingham General Hospital, and had the medal and clasp for service at Nandi in 1903-6, having joined the R.A.M.C. in 1904. He attained to his majority in 1915, and was appointed temporary lieutenant-colonel whilst in command of a field ambulance.

Died.

- Lieut. P. R. Wariyar, I.M.S.

Wounded.

- Capt. F. Irvine, R.A.M.C.
Surg. J. N. McB. Ross, R.N.
Lieut. J. B. Stevenson, R.A.M.C., attached Liverpool Regiment.
Capt. J. I. Lawson, R.A.M.C., attached Royal Lancaster Regiment.
Capt. W. A. Miller, D.S.O., M.C., R.A.M.C., attached Royal Fusiliers.
Lieut. H. P. Harpur, R.A.M.C., attached South Staffs. Regiment.
Capt. J. M. Young, R.A.M.C., attached Highland Light Infirmary.

THE HONOURS LIST.

The following awards to medical officers are announced :—

Distinguished Service Order.

- Capt. (Temp. Major) Gerald Fitzgerald Rudkin, R.A.M.C.
For distinguished service in the field.
- Major (Temp. Lieut.-Col.) Hugh Herbert James Fawcett, R.A.M.C.
For conspicuous gallantry in action and devotion to duty. He tended the wounded continuously for 72 hours. He has on many previous occasions done very fine work.
- Temp. Capt. Donald Olson Riddel, M.B., R.A.M.C.
For conspicuous gallantry and devotion to duty. He tended and dressed the wounded under intense fire, displaying the greatest courage and determination. Later, during a very heavy enemy bombardment, he walked up and down our trenches and administered to the wounded.
- Capt. George Vincent Stockdale, M.B., R.A.M.C.
For conspicuous gallantry and devotion to duty. He led his stretcher-bearers continuously for five days, under very heavy fire, and on several occasions rescued wounded men by himself. He has on many previous occasions done very fine work.

Military Cross

- Capt. Richard Andrew Austin, R.A.M.C.
For conspicuous gallantry and devotion to duty. He tended and dressed the wounded under very heavy fire with great courage and determination. He has previously done very fine work.
- Capt. Robert Eric Barnsley, R.A.M.C.
For conspicuous gallantry and devotion to duty when in charge of an advanced dressing station. He tended the wounded under heavy hostile shell-fire when impossible to bring them to the dressing station.
- Temp. Capt. Tobias Rustat Hemsted Blake, M.B., R.A.M.C.
For conspicuous gallantry and devotion to duty. He dressed the wounded for seven hours in an open trench under very heavy fire. Later, he tended the wounded in the open, displaying great courage and determination.
- Temp. Lieut. George Bent Buckley, R.A.M.C.
For conspicuous gallantry and devotion to duty. He tended and dressed the wounded under very heavy fire, displaying great courage and determination. He was wounded.
- Temp. Capt. Leeming Anderson Carr, M.B., R.A.M.C.
For conspicuous gallantry and devotion to duty. He continually led stretcher-bearers under very heavy fire, and on many occasions he himself rescued wounded men. He set a splendid example of courage and determination.
- Capt. Charles Leopold Franklin, M.B., R.A.M.C.
For conspicuous gallantry and devotion to duty. He personally led parties of stretcher-bearers under very heavy fire, successfully rescuing and evacuating the wounded. He showed great courage and determination throughout.
- Temp. Capt. Robert Masson Greig, M.B., R.A.M.C.
For conspicuous gallantry and devotion to duty. He led a stretcher party under heavy fire, and personally superintended the collection and evacuation of the wounded for 30 hours. He displayed great courage and determination throughout.
- Capt. Charles Frederick Hacker, M.B., R.A.M.C.
For conspicuous gallantry and devotion to duty. He tended and dressed the wounded under very heavy fire with great courage and determination. Later, he rescued a wounded officer from "No Man's Land" under very trying circumstances.
- Capt. Richard William George Hingston, M.B., I.M.S.
For conspicuous gallantry and devotion to duty. He tended and dressed the wounded continuously under very heavy fire at close range regardless of his own personal safety.
- Temp. Capt. Patrick Joseph Lane, M.B., R.A.M.C.
For conspicuous gallantry and devotion to duty. He led parties of stretcher-bearers under heavy fire, displaying great courage and skill. He worked continuously for 48 hours, and was himself wounded. He set a splendid example to the men under him.
- Temp. Capt. George Barbour Macgregor, M.B., R.A.M.C.
For conspicuous gallantry and devotion to duty. He tended and dressed the wounded under very heavy fire with great courage and determination. He has on many previous occasions done very fine work.
- Temp. Lieut. Gerald James McGerty, M.B., R.A.M.C.
For conspicuous gallantry and devotion to duty. Although himself very severely wounded, he supervised the work of tending to five other wounded men. He displayed great courage and determination throughout.
- Temp. Capt. Timothy Meagher, M.B., R.A.M.C.
For conspicuous gallantry and devotion to duty. He tended and dressed the wounded under very heavy fire, displaying great courage and determination throughout the operations. He has on many previous occasions done very fine work.
- Temp. Lieut. Douglas Macleod Moffatt, M.D., R.A.M.C.
For conspicuous gallantry and devotion to duty. He tended and dressed the wounded under very heavy fire with great courage and determination. He set a splendid example throughout.
- Temp. Capt. William Morrison, M.B., R.A.M.C.
For conspicuous gallantry and devotion to duty. Although himself wounded, he tended and dressed the wounded under very heavy fire, displaying great courage and determination.
- Temp. Capt. Basil Newman Murphy, R.A.M.C.
For conspicuous gallantry and devotion to duty. Although himself wounded he tended and dressed the wounded under very heavy fire, displaying great courage and determination.
- Capt. Arthur Herbert Norris, R.A.M.C.
For conspicuous gallantry and devotion to duty. He tended and dressed the wounded under very heavy fire, displaying great courage and determination. He has done very fine work throughout the campaign.
- Capt. Harold Gordon Oliver, R.A.M.C.
For conspicuous gallantry and devotion to duty. He organised and led stretcher-parties under very heavy fire with great courage and determination.
- Capt. John McCallum Orme, M.B., R.A.M.C.
For conspicuous gallantry and devotion to duty. He tended and dressed the wounded under very heavy fire, displaying great courage and determination. Later, after his battalion had been relieved, he remained behind evacuating the wounded.
- Temp. Capt. John McLean Pinkerton, M.B., R.A.M.C.
For conspicuous gallantry and devotion to duty. He tended and dressed the wounded under heavy fire with great courage and determination. He has previously done very fine work.

Temp. Lieut. Samuel Pool, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty. He led his bearers through a heavy fire and collected a number of wounded in the open. He worked continuously for 48 hours, displaying great courage and determination.

Temp. Capt. Charles Derwent Pye-Smith, M.B., F.R.C.S., R.A.M.C.

For conspicuous gallantry and devotion to duty. He tended and dressed the wounded under intense fire throughout the operations with great courage and determination. He has on many previous occasions done very fine work.

Temp. Capt. William Russell, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty. He tended and dressed the wounded of four regiments under intense fire, displaying great courage and determination. He set a splendid example to all ranks.

Temp. Capt. John Caruthers Sale, R.A.M.C.

For conspicuous gallantry and devotion to duty. He rescued many wounded men under intense fire by carrying them on his back, displaying great courage and coolness. He set a splendid example throughout the operations.

Temp. Lieut. Malcolm Sommerville, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty. He tended and dressed the wounded under very heavy fire, displaying great courage and determination.

Capt. Thomas Ainsworth Townsend, R.A.M.C.

For conspicuous gallantry and devotion to duty. He displayed great courage and determination in rescuing several men who had been buried under heavy fire. On three previous occasions he has done very fine work.

Temp. Capt. John Wright Turner, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty. He worked incessantly by day and night, bringing in wounded from shell-holes and attending them in dug-outs. He displayed great determination and a total disregard of personal safety throughout.

Temp. Lieut. Reginald Fowke Williams, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty. He rescued a wounded man under very heavy fire. Later, although himself wounded, he continued to dress the wounded, displaying great courage and determination.

Temp. Capt. Eric Wordley, M.B., R.A.M.C., Devon R.

For conspicuous gallantry and devotion to duty. He tended and dressed the wounded under very heavy fire with great courage and determination. He set a splendid example throughout.

Temp. Lieut. Charles Stuart Wynne, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty. He worked all night tending and dressing the wounded in the open, thereby saving many lives. Later he carried out his fine work continuously for three days.

Capt. Douglas Dunbar Jamieson, Australian A.M.C.

For conspicuous gallantry and devotion to duty. With two drivers and a man he went with a sandcart to the left flank. He rescued two wounded men and loaded them into the cart under intense fire. Later, he searched the front for more wounded men.

Capt. Geoffrey Hampden Vernon, Australian A.M.C.

For conspicuous gallantry and devotion to duty. He tended and dressed the wounded under heavy fire displaying great courage and determination. Later, he remained out all night with a wounded man.

Capt. Henry Harold Argue, Canadian A.M.C.

For conspicuous gallantry and devotion to duty. He tended and dressed the wounded under very heavy fire, displaying great courage and determination throughout.

Capt. William Brown, Canadian A.M.C.

For conspicuous gallantry and devotion to duty. He tended and dressed the wounded continuously for 48 hours under very heavy fire. He displayed great courage and determination throughout the operations.

Capt. Harold Wigmore McGill, Canadian A.M.C.

For conspicuous gallantry and devotion to duty. He tended and dressed the wounded under very heavy fire with great courage and determination.

Capt. Ronald Graeme Scott Orbell, New Zealand Medical Corps.

For conspicuous gallantry and devotion to duty. He tended the wounded under heavy fire with great courage and determination. On one occasion he carried two wounded men on his horse to safety.

*Second Bar to the Military Cross.***Temp. Capt. William Howard Lister, M.C., R.A.M.C.**

For conspicuous gallantry and devotion to duty. He led his stretcher-bearers under intense fire, dressing and evacuating the wounded. He displayed great determination and an utter disregard for his personal safety throughout the operations. (The award of the Military Cross was recorded in THE LANCET of June 25th, 1915, and the first bar in THE LANCET of Oct. 25th, 1916.)

*Bar to the Military Cross.***Temp. Capt. George D'Rastrik Carr, M.C., R.A.M.C.**

For conspicuous gallantry and devotion to duty. Although himself wounded he continued to tend and dress the wounded, displaying great courage and determination throughout. (The award of the Military Cross was recorded in THE LANCET of Feb. 5th, 1916.)

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Second Lieut. R. N. Heathcote, East Yorkshire Regiment, only son of Dr. R. G. Heathcote, of West Didsbury, near Manchester.

Lieut. J. M. T. Stock, East Lancashire Regiment, younger son of the late Lieut.-Colonel J. N. Stock, R.A.M.C., of Cheltenham.

Capt. I. M. Brown, R.A.M.C., attached Royal Field Artillery, younger son of Dr. M. Brown, of Upper Berkeley-street, London, W.

Lieut. A. J. Sells, Royal West Surrey Regiment, youngest surviving son of Dr. C. J. Sells, of Guildford, Surrey.

Second Lieut. A. M. M. Mackenzie, Seaforth Highlanders, son of the late Dr. A. F. Mackenzie, of Glasgow.

Lieut. J. H. T. Liddell, King's Royal Rifle Corps, elder son of Dr. J. Liddell, of Harrogate.

Second Lieut. R. D. French, London Regiment, eldest son of Dr. R. H. French, of North Finchley, London.

Second Lieut. L. H. W. McKisack, attached Royal Flying Corps, elder son of Dr. H. L. McKisack, of Belfast.

Second Lieut. R. M. Baskett, Cheshire Regiment, son of Dr. B. G. M. Baskett, of Rayleigh, Essex.

Capt. M. C. Browne, Royal Marines, youngest son of Dr. S. Browne, late Royal Navy, of Esher, Surrey.

I. Corry, Royal Fusiliers, fifth son of the late Dr. W. Corry, J.P., of Australia, and of Anerley, Surrey.

Capt. C. H. Dwyer, Worcester Regiment, elder son of Dr. H. H. Dwyer, of Kingswood, Warwickshire, and late of Hoylake, Cheshire.

Second Lieut. St. J. J. Giusani, Royal Dublin Fusiliers, son of Dr. J. Giusani, of Cork.

THE CHANGES IN THE NAVY.

In the House of Commons on Wednesday evening Mr. Balfour, First Lord of the Admiralty, announced the appointment of Admiral Jellicoe as First Sea Lord and the assumption by Vice-Admiral Sir David Beatty of the command of the Grand Fleet.

OFFICIAL WAR PICTURES.—For some months Mr. Muirhead Bone has been engaged as a commissioned officer in the British Army in France making drawings of places and incidents in the war for permanent record. Reproductions of some of these drawings will be published shortly, by authority of the War Office, in monthly parts, with appropriate letterpress. Each part will contain facsimiles of over 20 drawings, and the first will be published early in December with a preface by General Sir Douglas Haig. Mr. Muirhead Bone has enjoyed, among critics and collectors, a reputation rarely accorded in this country to an artist not working in the more popular mediums of oil and water-colour, and in no way associated with comic draughtsmanship. As an etcher he is ranked by many with Rembrandt, Meryon, and Whistler, many "states" of his plates reaching in the market sums seldom excelled by those of the old masters. Prior to the war the museums of Leipzig, Dresden, and Berlin vied with each other in obtaining examples of his art. But it is to his pencil work, by which he made his early success, that he owes his unique position in this country. It is no exaggeration to say that no one ever got so much out of a simple lead pencil in rendering architecture, light, or atmosphere: for other draughtsmen have usually employed a brush and sepia for themes of a similar kind. It is understood that Mr. Muirhead Bone visited the front in order to make drawings of ruined churches and other buildings, a task for which he was supremely fitted. But finding the humanity among the ruins even more suggestive, he has developed an hitherto unsuspected genius for figure drawing. While his work is to be published under the auspices of the War Office, the original drawings are to be deposited in the Print Room of the British Museum, already enriched by his art. The learned keeper, Mr. Campbell Dodgson, is, indeed, the great authority on Mr. Bone's artistic career and the author of an eikonography on the subject. Mr. Bone was born in 1876, and was educated at the Glasgow Art Evening School. He is a member of the New English Art Club. One of his rare oil paintings is the property of the Contemporary Art Society. In an age when "representative" art has fallen into disrepute, Mr. Bone has vindicated the principle that Nature, at least when rendered in black and white, is not quite so red or square as she is sometimes painted by other modern artists.

OBITUARY OF THE WAR.

MORGAN JAMES REES, M.D. LOND., D.P.H.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain M. J. Rees, who died on Oct. 30th, from wounds received in action, at the age of 41 years, was one of the medical inspectors of the Local Government Board. After qualifying in 1902, he held resident appointments at



Guy's Hospital, was for some time assistant medical officer in the service of the Metropolitan Asylums Board, and commenced his public health career as assistant to Dr. A. Ashby, the medical officer of health of the county borough of Reading. He was then for some years medical officer of health to Aberdare urban district council until he joined the medical staff of the central public health authority in 1911.

Rees possessed sterling qualities which made him respected by all who came in contact with him. He did much good work as medical inspector of the Local Government Board, and his intimate knowledge of the Welsh language enabled him to conduct inquiries in his native country with conspicuous success. A record of some of the more important work that he did on behalf of the Board is preserved in the official reports which bear his name. That dealing with an outbreak of diarrhoea in the parishes of Blackwell and South Normanton, in the Blackwell rural district, associated with pollution of the public water-supply is a valuable contribution to epidemiology. Rees's untimely death is a source of profound sorrow to his many friends, but he died, as he would like to have died, sharing the hardships and mitigating the sufferings of the men who are fighting for the British Empire.

THOMAS CLATWORTHY KIDNER, M.R.C.S., L.D.S.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain T. C. Kidner, who was killed in action on Oct. 26th at the age of 26, was the youngest son of



Wm. Kidner, of Stoke Holy Cross, Norwich. After matriculating from the Taunton School he qualified at the Royal Dental Hospital in 1912, being Saunders scholar for the year. He then studied at the Middlesex Hospital, gaining the Lyell medal and scholarship in 1914, and taking the Conjoint Board qualification in the same year. Shortly after the outbreak of war he received his commission in the R.A.M.C., attached to the Middlesex Regiment, and

was gazetted Captain in March, 1915, when in France. Captain Kidner was an all-round man of a type specially useful in active service. He was a keen sportsman and at one time a member of the Kingston Rowing Club. His colonel writes of his popularity amongst his brother officers as well as with the men, adding that his place would be hard to fill.

CHARLES HENRY BENHAM, M.D., M.R.C.P. LOND.,

MAJOR, ROYAL ARMY MEDICAL CORPS.

Major C. H. Benham, who died at Malta on Nov. 8th, at the age of 42, was the son of Henry James Benham, of Ollon, Vaud, Switzerland. Educated at Queen Elizabeth's School, Ipswich, and London University, he took his medical course at University College Hospital, qualifying in 1897, and passing his M.D. Lond. some years later. He was also admitted a Member of the Royal College of Physicians of London.

After holding house appointments at his hospital and elsewhere, he settled in practice at Brighton, where he became a familiar figure in the public and social life of the place. Attached to the R.A.M.C. at the outbreak of war, he served on the staff of the 2nd Eastern General Hospital until requisitioned for service in Salonica. Here the climatic conditions reacted unfavourably on a constitution not naturally robust, and he died as he was



returning home on sick-leave. Major Benham had the confidence of his colleagues and took his full share in public work. He was chairman of the East Sussex Medical Committee, a member of the Hove Town Council and of its Education Committee, and also at one time chairman of the East Sussex Insurance Committee. He had also an extensive practice in Brighton and Hove, and held a number of appointments. He took special interest in the bacteriological problems of private practice and had published papers on the bacteriology and vaccine treatment of the common cold. Of genial and kindly nature, he was a man quick to make friends, and much beloved by his patients.

CHARLES MILL NICOL, M.B., CH.B. GLASG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain C. M. Nicol, who died of wounds received in action on Oct. 23rd, was the son of the late J. B. Nicol, of Greenock. Educated at Greenock Academy and Glasgow University, he graduated in 1909, and at once entered the R.A.M.C. He was stationed in England for a few years, gazetted Captain in 1912, and was in Egypt at the outbreak of war. Transferred

home, he was sent to France in December, 1914, where his conspicuous merit quickly brought him under notice and he was appointed, and continued to act till his death, as Deputy Assistant Director of Medical Services.

Captain Nicol was only 29 at the time of his death, and had already shown promise of high attainment. The dean of his medical school writes of him as a good student, and a friend adds: "He

was an outstanding officer from whom much was expected, and his early death has cut short a career which promised to lead him to the heights of his profession. Known and admired for his intellectual attainments, his gentle manners, and his athletic ability, the loss of Charles Nicol will be keenly felt in both official and social life." Captain Nicol was unmarried.



AUBREY WILLIAM VENABLES, M.R.C.S. ENG.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain A. W. Venables, who was killed in action on Oct. 2nd at the age of 29 years, was the elder son of Wm. H. Venables, of West Hampstead, London. Educated at the South-Eastern College, Ramsgate, he entered the medical school of St. Mary's Hospital, qualifying in 1913.



He then held the appointments of house physician and house surgeon at his hospital. On the outbreak of war he volunteered for service, and obtained a commission in the R.A.M.C. He was first at Aldershot, then in a general hospital in Paris, and in November, 1915, was transferred to the Salonica Force, where he was attached to a field ambulance for nearly a year up to the time of his death.

From early youth Captain Venables's earnest nature had turned to the relief of others' burdens. His commanding officer writes of him as a brave and loyal officer and true comrade, and "C.R.H." writes in the *St. Mary's Hospital Gazette*: "His indifference to outward show and fearless outspokenness were the results of a depth of character, a quiet sense of humour, and an intense unshakable faith which would have led him to a noble future."

STATE COAL.

Until further notice the South Wales Coal Field has been taken over by the Board of Trade under the Defence of the Realm Act.

"AT THE WAR."—Lord Northcliffe's book under this title was published this week by Messrs. Hodder and Stoughton, price 5s. net. All profits from the sale of the book will be given to the joint War Committee of the British Red Cross Society and the Order of St. John of Jerusalem in England, at whose request the book was compiled from letters and telegrams written by the author during the war.

SCOTTISH BLINDED SOLDIERS: WORKING OF THE NEWINGTON HOUSE SCHEME.—At a meeting of the directors of the Edinburgh Blind Asylum on Nov. 27th the position of the Scottish scheme for blinded soldiers was explained by Mr. Somerville Grieve, the convener of the Blinded Soldiers and Sailors Committee, under which Newington House, Edinburgh, is managed. Mr. Grieve said that circumstances had arisen which necessitated some modification in the original scheme for the training and giving of aid to blinded sailors and soldiers, owing to the order having been issued by the War Office that all blinded soldiers must pass through No. 2 Clearing Hospital, Chelsea. They were now endeavouring to make arrangements whereby blinded Scottish sailors and soldiers might, if they so desired, begin their initial training in Edinburgh. Dr. Burns said that he had visited London with the object of suggesting coöperation with the institutions organised like their own; no encouragement was received. The Blinded Soldiers and Sailors Committee considered that no benefit would arise from centralising all efforts in London, and they had already experience of the infiltration into Scotland of a number of blinded, some of whom were partially trained, and others who wished to be near their own homes. Dr. Burns said that all these would have to be cared for at Newington House, and in all probability for a number of years, adding that one way in which an enormous saving of money could be effected would be to have all blinded Scottish sailors and soldiers sent direct to Craigleith Military Hospital, where they would be in touch with Newington House. Under such a scheme thousands of pounds, he considered, would be saved, and, what was of equal importance, full advantage would be taken of Newington House, and the Scottish national feeling would be satisfied.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—W. Andrew (Section I.), King's College Hospital; L. Baumgarten (Sections I. and II.), Berne and London Hospital; P. C. C. Fenwick (Sections I. and II.), St. Thomas's Hospital; G. H. de Kleyn (Section I.), Utrecht; S. G. Kastellanski (Section I.), London Hospital; C. de C. W. Langdon (Sections I. and II.), Manchester; and A. L. Watts (Sections I. and II.), Oxford and University College Hospital.

Medicine.—A. S. Green (Sections I. and II.), Middlesex; G. H. de Kleyn (Sections I. and II.), Utrecht; and R. Sinha (Sections I. and II.), London Hospital.

Forensic Medicine.—L. E. A. B. Farr, Cambridge and King's College Hospital; J. M. Forbes, Aberdeen; G. H. de Kleyn, Utrecht; and R. Sinha, London Hospital.

Midwifery.—J. Beheshtian, Charing Cross Hospital; G. W. Coombes, London Hospital; L. E. A. B. Farr, Cambridge and King's College Hospital; G. H. de Kleyn, Utrecht; S. Mikhail, Middlesex Hospital; and B. Ramirez, Guy's Hospital.

The diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery:—L. Baumgarten and P. C. C. Fenwick.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held at Caxton Hall, Westminster, on Nov. 8th, Sir Francis H. Champneys being in the chair. A number of midwives were struck off the Roll, the following charges, amongst others, having been brought forward:—

The midwife not being scrupulously clean in person, clothing, and appliances, as required by Rules E. 1 (old rules) and E. 2 (new rules); not taking and recording the pulse and temperature of patients at each visit as required by Rules E. 13 (old rules) and E. 14 (new rules); not keeping her register of cases as required by Rules E. 23 (old rules) and E. 4 (new rules). That being in attendance at a confinement the midwife was guilty of malpractice in the following respect: she permitted another person to occupy the same bed as the patient during her lying-in. A patient suffering from illness with headache and sickness, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 20; the patient being in the condition aforesaid, she did not hand to the husband or the nearest relative or friend present the form of sending for medical help, properly filled up and signed by her, in order that this might be immediately forwarded to the medical practitioner as required by Rule E. 20; and medical aid having been sought for the patient, she neglected to notify the local supervising authority thereof, as required by Rule E. 22 (1) (a). A midwife having been in attendance upon a patient suffering from puerperal fever, she was guilty of negligence and misconduct in that without undergoing dissection to the satisfaction of the local supervising authority, and contrary to the provisions of Rule E. 6, she attended a patient as a midwife in her confinement, and notwithstanding the warning of the local supervising authority continued so in attendance upon her. A midwife being in attendance at a confinement, she did not adopt the antiseptic precautions required by Rules E. 4 and E. 8; the child suffering from inflammation of, and discharge from, the eyes on the third day, and continuing so to suffer, she did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (5). A midwife not keeping her appliances scrupulously clean, as required by Rule E. 1 (old rules) and E. 2 (new rules), persistently refusing to avail herself of offers made by the Inspector of Midwives to instruct her in the use of a clinical thermometer so as to enable her to comply with Rules E. 13 (old rules) and E. 14 (new rules).

A CENTENARIAN.—Mrs. Mary Paige, of Rochester, recently celebrated the 101st anniversary of her birthday.

THE SOCIETY OF EDUCATION'S INQUIRY.—The inquiry of a research committee of the Society of Education, the object of which is to collect from adults, by means of a questionnaire, information as to the ways in which they, as children, became aware of the facts of sex, birth, and parenthood, has already produced considerable response. The committee are classifying the results under a number of heads and are desirous of obtaining further replies. Forms should be filled in and returned anonymously to the committee, who also prefer, in the interests of the investigation, to preserve their anonymity. Applications for the questionnaire should be made to the secretary of the Research Committee, Society of Education, 9, Brunswick-square, London, W.C.

THE WALTER AND ELIZA HALL INSTITUTE OF RESEARCH IN PATHOLOGY AND MEDICINE, MELBOURNE.—Through the generosity of the trustees of the Walter and Eliza Hall Fund a research institute has been established in Melbourne in connexion with the Melbourne Hospital. The institute is controlled by a board representing the trustees, the University of Melbourne, and the Melbourne Hospital. A building of three stories has been erected at a cost of over £10,000 in immediate connexion with the pathological department of the hospital, which has itself recently been entirely rebuilt and now contains 325 beds. The office of director of the institute is vacant, and applications for the post are invited through the Agent-General for Victoria, Aldwych, Strand, London, W.C.

ROYAL HOSPITAL FOR INCURABLES.—The balance-sheet submitted at the annual meeting of this institution at Cannon-street Hotel on Nov. 24th showed that the income for the past year was £36,488 as compared with £31,186 in the previous year, but investments of £5,000 had to be sold in order to meet debts. This hospital does not receive any help from the Metropolitan Hospital Funds.

HOSPITAL SUNDAY FUND AT BRISTOL.—At the meeting of the Bristol Hospital Sunday Fund held recently, it was stated that the total collection for 1916 amounted to £2765, and of this sum £2606 had been allotted to the medical charities of Bristol. Approximately the average yearly collection for the Fund had been £2000, and the Lord Mayor (Dr. Barclay Baron) is making a strong effort to have a record amount for 1917.

DONATIONS AND BEQUESTS.—The late Mrs. Catherine Nash, of Eastbourne, left by will £5000 to the Middlesex Hospital and £500 to the Royal Medical Benevolent Fund.—Under the will of the late Mrs. Elizabeth Kirk Alston about £6400 will be divided among a number of medical charities.

ROYAL NORMAL COLLEGE FOR THE BLIND.—The governing body of the college have accepted the offer of the Carnegie United Kingdom Trustees to give £12,500 on condition that £25,000 are raised from other sources for the permanent endowment of the college. Cheques and money orders may be sent to Lord Burnham or to the Right Honourable W. Hayes Fisher, M.P., at the Royal Normal College for the Blind, Upper Norwood, S.E.

DURING the present session there are 78 women students attending the Belfast Medical School.

Colonel William Henry Bull, A.M.S., K.H.S., V.D., Inspector of the V.A.D. Hospitals, has been appointed one of the Deputy Lieutenants for Buckinghamshire.

At the Royal Society of Arts (John-street, Adelphi) Mr. C. M. Whittaker, B.Sc., will lecture on the Coal Tar Colour Industry on Wednesday, Dec. 6th, at 4.30 p.m.

At Knowle, Bristol, some of the residents have presented Mr. Harry Francois Devis with a cigarette-case and a case of pipes as a mark of respect on the occasion of his departure to take up military duties. Mr. Devis has four sons serving at the front.

THE NEW CHELSEA HOSPITAL FOR WOMEN.—This hospital was opened in Arthur-street, Chelsea, by H.M. the Queen in July last and has been in occupation for four months, greatly to the advantage of the patients. As soon as the new nurses' home can be built, that part of the hospital which is being used temporarily for the nursing and domestic staffs will be vacated and 23 more beds will be available for patients. This completion of the rebuilding scheme will have a marked effect on the long "waiting list" and improve the special facilities for admission which are being given to relatives of our sailors and soldiers. A sum of £25,000 is still required. Donations of £1000 to name beds in perpetuity as memorials may be made in instalments, and the amount now being spent in interest on the loan at the bank for the rebuilding fund would be very valuable for current maintenance in these days of advanced prices. Donations and subscriptions will be received by the honorary treasurer, Mr. Sidney H. Goldsmid, or by the secretary, Mr. Herbert H. Jennings, at the hospital.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Board of Pensions Bill.

THE Board of Pensions Bill will probably be radically altered in its progress through the House of Commons. In the course of the Committee stage on Monday Mr. HOGGE moved the first of a series of amendments to secure the adoption of a unified, centralised pensions scheme. Mr. HENDERSON, who is in charge of the Bill, accepted an amendment in the direction of unification, and it is understood that a Pensions Minister will be appointed, advised by assistant secretaries of the several departments concerned.

HOUSE OF LORDS.

TUESDAY, NOV. 28TH.

Military Patients in Civil Hospitals.

LORD DEVONPORT asked the Under Secretary for War in the House of Lords on Tuesday last whether representations had been made to the War Office by hospitals

as to the inadequacy of the grant *per capita* for the maintenance of military patients in civil hospitals agreed to at the commencement of the war.—Lord DERBY replied that with reference to the three shillings grant to auxiliary departments, new arrangements were being made with the joint War Committee of the Red Cross and the Order of St. John, as a result of which a new grant of sixpence a day would be made under certain conditions for every unoccupied bed. He added that owing to the improvement in the administration of hospitals of late there had been an actual decrease in the cost per bed during the last six months in spite of the general rise in prices.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 22ND.

Westenhanger Camp.

MR. R. MCNEILL asked the Financial Secretary to the War Office whether he had consulted the Law Officers of the Crown as to the legality under the Defence of the Realm Acts of the proposed conversion of Westenhanger Camp into a venereal hospital by the Canadian military authorities; and whether, in view of the doubtful legality of the scheme and the local opposition to it, he would give an assurance that the scheme now in abeyance should not be proceeded with until an opportunity had been given of discussing the question in that House.—Mr. FORSTER replied: It has been decided not to use Westenhanger Camp as a venereal hospital. The points mentioned in the question do not therefore arise. I must not, however, be taken as accepting my honourable friend's view that there would have been any want of legality in using the camp for the purpose indicated.

Body Shields.

ANSWERING Mr. BYRNE, Mr. FORSTER wrote: I understand that the question of testing some of the body shields which are now on sale is being considered by the Ministry of Munitions.

THURSDAY, NOV. 23RD.

The Food Regulations.

SIR E. CORNWALL asked the Parliamentary Secretary to the Board of Trade whether he was considering the desirability of requiring bakers not to sell bread until 24 hours after it was baked; and whether he was aware that this course would not only add to the nutritive properties of the article but would enable baking to be done at any hour of the day, thereby saving labour and fuel.—Mr. PRETYMAN replied: It is known that considerable economy can be effected by not consuming bread until 24 hours after it is baked, and the publicity given to this view by my honourable friend's question will, I hope, tend to diffuse the knowledge amongst consumers. Enforced preventing of the sale of new bread has been found impracticable, mainly owing to the lack of storage accommodation in bakeries. The consumer is, however, not usually in the same difficulty.

MAJOR NEWMAN asked whether the machinery at present in use in British flour-mills was capable of producing the new standard war-flour; and, if not, what immediate steps would be taken to avert a bread famine.—Mr. PRETYMAN answered: I am glad to take this opportunity of pointing out that in cases in which the adaptation of milling machinery so as to produce one uniform grade of flour presents serious difficulty, it will be sufficient if all the grades of flour produced are mixed together thoroughly and uniformly in preparing the flour for delivery. The process of manufacture of flour as dealt with in the Order will not be deemed to be complete until the flour is ready for delivery.

MR. FELL asked whether the honourable gentleman would consider the question of the use of rice in this country from which the skin which contained the most nutritive portion of the grain had been removed by polishing by machinery; and whether he would forbid this polishing of the rice, which was only done to give it an additional white appearance, and compel it to be sold in its natural condition during the continuance of the war.—Mr. PRETYMAN replied: I have received other representations on this subject, which is receiving my careful consideration.

MR. PENNEFATHER asked whether the honourable gentleman was aware that for purely sweetening purposes a wholesome substitute for sugar could be obtained from coal tar; and, in view of the scarcity and high price of sugar, would he take steps to encourage the manufacture and use of this home-produced substitute for an imported article.—Mr. PRETYMAN said in reply: I am aware that certain substances derived from coal-tar products may be used for sweetening purposes. The honourable Member, I think, knows that these substances possess no food value, and I am advised that it would not be practicable to extend their manufacture in this country at the present time to any material degree in view of the immediate demands on the capacity of the works which are producing explosives.

Nerve-strained Soldiers.

Sir E. CORNWALL asked the Financial Secretary to the War Office whether he was considering the importance of taking immediate steps to organise a scheme whereby officers and men sent home suffering from shell shock and nervous troubles could be given beneficial open-air employment on the land, thus supplementing the existing labour available for agricultural pursuits; and whether he would consider if such a scheme could be more advantageous and economical both for the State and the farmer by each sharing in the remuneration to be given to the men so employed.—Mr. FORSTER answered: The question is being considered.

After care of Disabled Soldiers.

Lord H. CAVENDISH-BENTINCK asked the Secretary for War if he had come to a decision whether or not the Army authorities would assume responsibility for the complete restoration to health of the disabled soldier; and was he aware that the state of indecision as to which authority in future was responsible, which had now lasted for several months, was having a paralysing effect on the development of schemes for the after-care of the disabled soldier.—Mr. LLOYD GEORGE answered: A scheme has been prepared and has now been submitted to the different authorities concerned for their remarks. I hope soon to be in a position to make a further statement.

London Insurance Committee and Medical Practitioners.

Mr. ALDEN asked the representative of the National Insurance Commissioners whether he was aware that the London Insurance Committee declined to pay the balance due to practitioners under their agreements in respect of the year 1915 unless a special form of receipt was signed relinquishing their legal rights under the regulations and otherwise; and whether he would take action to remedy this state of affairs, which was causing irritation and dissatisfaction to the doctors.—Mr. C. ROBERTS wrote in reply: *Prima facie* it does not appear unreasonable that if payment is being made to practitioners of the balance of the remuneration due to them in respect of any particular year they should be expected to give a receipt in full discharge of such balance. I am, however, making inquiry into the precise form of receipt and discharge adopted by the Committee.

MONDAY, NOV. 27TH.

Unfounded Allegations about Indian Hospitals.

Major HUNT asked the Secretary for India whether his attention had been called to the bad and verminous condition of another military hospital in India, and as to the desire to keep down expenses without regard to the comfort and well-being of the sick and wounded men; and whether he proposed to take any action in the matter.—Mr. CHAMBERLAIN, in a detailed explanation, read a telegram from the General Commanding at Bombay, transmitted through the Commander-in-Chief, Sir Charles Monro, repudiating the charges, which appear to have been made anonymously.

TUESDAY, NOV. 28TH.

Payments for Examining Recruits.

Mr. COWAN asked the Financial Secretary to the War Office whether his attention had been called to the fact that certain Scottish doctors had been paid, for medically examining recruits, at the rate of 2s. 6d. each for the first 16 recruits with a limit of £2 for any one day, resulting, in some cases, in an average rate of less than 6d. per recruit, while other medical men had been paid at the rate of 2s. 6d. per head without any limit.—Mr. FORSTER replied: £2 is considered a fair maximum for a full day's work in the medical examination of recruits. Authority has been given to exceed this maximum in certain exceptional cases.

Appointments.

Successful applicants for vacancies. Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

CHRISTOPHERSON, C., M.R.C.S., L.R.C.P. Lond., has been appointed to be one of the Medical Referees under the Workmen's Compensation Act, 1906, for County Court Circuit No. 50.

CULLEN, B. T., M.B., B.Ch., R.U.I., to be Certifying Surgeon under the Factory and Workshop Acts for the Ballyhaise District of the county of Cavan.

HOLLOWAY-OLIVER, S., Dental Clinical Assistant to King George Hospital.

HUXLEY, FRANCES, M.D. Vict., Physician to the Ante-natal Department of Queen Charlotte's Lying-in Hospital.

LEWELLYN, JOHN, M.R.C.S., Medical Officer for the St. Just District by the Truro (Cornwall) Board of Guardians.

MACKENZIE, MARION E., M.B., Ch.B., Edin., Medical Officer to take charge of the Maternity Centres in the county of Denbigh.

WINTLE, COLSTON, L.R.C.P., M.R.C.S., J.P., has been reappointed Chairman of the Health Committee of the Bristol City Council.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BIRMINGHAM EAR AND THROAT HOSPITAL, Edmund-street.—Clinical Assistant in Out-patient Department two mornings per week. Salary £50 per annum.

BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £250 per annum, with apartments, &c.

BRADFORD, ROYAL EYE AND EAR HOSPITAL.—House Surgeon (non-resident).

BRISTOL ROYAL INFIRMARY.—House Physician. Salary at rate of £120 per annum, with board, &c.

DARLINGTON HOSPITAL AND DISPENSARY.—House Surgeon. Salary £200 per annum, with board, &c.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Female Resident Assistant House Surgeon.

GLOUCESTER, GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION.—Surgeon.

GRIMSBY COUNTY BOROUGH.—Female Assistant Medical Officer. Salary £350 per annum.

GUY'S HOSPITAL.—Female Assistant to Obstetric Surgeons in Department for Venereal Diseases. Salary at rate of £300 per annum.

LEEDS PUBLIC DISPENSARY.—Resident Medical Officer. Salary £200 per annum, with board, &c.

MANCHESTER CITY SANITARY COMMITTEE.—Medical Officer. Salary £350 per annum.

MELBOURNE, AUSTRALIA.—Director to Walter and Eliza Hall Institute of Research in Pathology and Medicine. Salary £800 per annum.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—House Physician and House Surgeon. Salary £80 per annum each, with board, &c.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Physician. Salary £230 per annum, with board, &c.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Pathologist and Registrar. Salary at rate of £30 per annum and lunch. Also Physician to Infant Consultation Centre.

REONDA URBAN DISTRICT COUNCIL.—Temporary Assistant Medical Officer of Health and School Medical Officer. Salary £350 per annum.

ROTTERHAM HOSPITAL.—Junior House Surgeon. Salary £150 per annum, with board, &c.

ROYAL COLLEGE OF PHYSICIANS, London.—Milroy Lecturer for 1919.

ROYAL NATIONAL ORTHOPEDIC HOSPITAL, 234, Great Portland-street, W.—Resident Surgical Officer.

SHEFFIELD, ECCLESALL BIERLOW UNION INFIRMARY.—Assistant Medical Officer. Salary £200 per annum, with board, &c.

SHEFFIELD ROYAL HOSPITAL.—Ophthalmic and Aural House Surgeon, Casualty Officer, and Assistant House Surgeon. Salaries respectively £135, £130, and £120 per annum, with board, &c.

VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST ON THE SEPARATE PRINCIPLE.—Assistant Resident Medical Officer.

WALSALL AND DISTRICT HOSPITAL.—Female Senior House Surgeon. Salary £230 per annum, with board, &c.

WEST RIDING OF YORKSHIRE.—Two School Medical Inspectors. Salary £325 per annum.

Births, Marriages, and Deaths.

BIRTHS.

CLARK.—On Nov. 21st, at Wellington, Hereford, the wife of Henry Colbatch Clark, M.R.C.S., L.R.C.P., of a son.

CLIFF HODGES.—On Nov. 25th, at Birmaleigh, Princes Park, Liverpool, the wife of Captain W. Cliff Hodges, M.D. Cantab., R.A.M.C., of a son.

FITZWILLIAMS.—On Nov. 25th, to the wife of Captain Duncan C. L. Fitzwilliams, F.R.C.S., R.A.M.C., serving with British Red Cross—a daughter.

STRICKLAND.—On Nov. 25th, at Beckenham, Kent, the wife of Harold F. Strickland, F.R.C.S., Captain R.A.M.C., of a daughter.

MARRIAGES.

LIDDERDALE-GUY.—On Nov. 28th, at St. Margaret's Church, Lee, Captain W. Guy Lidderdale, R.A.M.C., to Dorothy Mary, only daughter of the late J. N. Guy, of Gosforth, Northumberland, and of Mrs. Guy, of Blackheath.

DEATHS.

ADLER.—On Nov. 27th, 1916, at 10, Bryanston-street, W., James Elrick Adler, F.R.C.S. Eng., aged 35, only son of the late Rev. James Alexander Adler. Greatly beloved by all who knew him. Interment at Abney Park Cemetery, Friday, Dec. 1st, at 1.30. Service at 12.15 at the Church of the Annunciation, Bryanston-street. No flowers. Colonial papers please copy.

BROWN.—On Nov. 15th, killed in action, Captain Ian Macdonald Brown, R.A.M.C., younger son of Dr. and Mrs. Macdonald Brown, Upper Berkeley-street, London, W., aged 28 years.

EVANS.—On Nov. 23rd, at Shrewsbury, George Jewell Evans, M.R.C.S., L.R.C.P.

GUNN.—On Nov. 19th, at 22, Fife-street, Dufftown, Norman Gunn, M.B., C.M., aged 43 years.

GUTHRIE.—On Nov. 13th, killed in action, George Watson Guthrie, R.A.M.C., of Lima, Peru.

TRAVERS.—On Nov. 24th, at London-road, St. Leonards-on-Sea, Otho Robert Travers, M.R.C.S., L.S.A., aged 64 years.

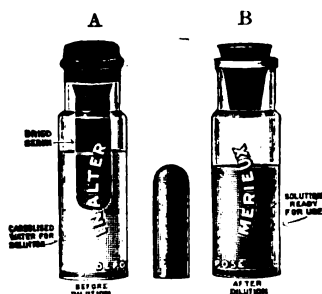
WARD.—On Nov. 13th, killed in action, Surgeon John Scott Ward, R.N., elder dearly-loved son of the late Rev. J. M. Ward, late Chaplain R.N., and Mrs. Ward, of Mount-row, Guernsey.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE "INALTER" VIAL FOR SERUMS.

THE Anglo-French Drug Company (late M. Bresillon and Co.), of Gamage Building, Holborn, E.C., are introducing some interesting biological products prepared under the immediate supervision of M. Merieux (late of the Pasteur Institute) in the Merieux Institute, Lyons, France. First may be mentioned a novel method of preserving serum in what is called the "inalter" vial. It is important to note that the adoption of this vial places at the disposal of the medical man a supply of active liquid serum ready for use at any time. So far the following serums are available by this method:—Antidiphtheritic serum, antitetanic serum, and anti-



streptococcal serum. From the accompanying illustration the principle will be easily understood. There is an ordinary vial (A) sealed by a rubber plug. Attached to this plug is a tube of dry serum (1 gramme) which dips into carbolised water (9 c.c.). Not until the serum is required is the tube withdrawn and its contents emptied into the solution. The dried serum quickly dissolves, and the solution is then ready for use. The main advantage of this device is that the serum is kept in the dried state until it is required for use. B shows the "vial" with the dried serum tube withdrawn, the contents of which have been dissolved in the weak carbolised solution and the rubber plug replaced. Besides a specimen of this "inalter" vial there have also been submitted to us some antidiphtheritic tablets for use in prophylactic treatment, and an antidiphtheritic fluid is also prepared for topical application to the affected mucosa. Lastly, we have received a specimen of "para-tetanine" for use as a dusting powder, and employed as a precautionary measure in the form of a dry dressing on the wounded surfaces.

A PROPRIETARY "SYSTEM" OF INFANT FEEDING.

AN appeal has been issued in the public press on behalf of a standardised method of infant feeding and management, which it is stated has been employed with uniform success amongst the wealthy for the past 27 years. The method is claimed to be simple enough to be understood by any mother and applicable to any infant. Funds are desired to establish "an infant welfare centre" where the method may now be practised and taught for the general benefit of infants. Medical opinion will naturally be withheld until the nature of the "system" is disclosed and until its promoters disclaim the deduction that it is intended to replace breast-feeding. A secret method suffers from the drawback, inherent to all except the inventor, that its effects cannot properly be observed or its results tested. No "system" can introduce into the houses of the poor the personal care and hygiene available in those of the wealthy. The well-intentioned purchasers of such a "system" may find themselves in possession of a method which is already practised by medical men and the free heritage of the poor.

FEVER IN SOMALILAND.

Mr. Geoffrey Francis Archer, C.M.G., Commissioner and Commander-in-Chief of the Somaliland Protectorate, states in his report for 1915-16, just received at the Colonial Office, that the general public health during the year was satisfactory. At Hargeisa, in the western area of the Protectorate near the Abyssinian frontier, a fever, simulating relapsing fever, is rife among the natives. The medical officer in charge of troops, who has had opportunities of examining the blood of members of a Camel Corps Company stationed near Hargeisa, reports that his examination was negative as regards the *Spirillum obernierii*, the causative agent of tick or African relapsing fever, but malarial parasites were found in the blood of six cases. All patients reacted to large doses of quinine, but convalescence was slow in most cases. The late medical officer in charge of troops, however, when reporting on relapsing fever at Hargeisa last year, stated that he had discovered the spirillum in the blood of patients. The total number of admissions to the hospitals at Berber, Bulbar, and Zeyla during the year was 924 and the number of deaths 41. Camp hospitals constructed of mat huts,

erected on wooden framework, are in use in each of the towns as isolation hospitals.

No reliable information is available as to the Somali population in the Protectorate, but 300,000 is generally quoted as an approximate figure. The alien community in the three coast towns comprises about 741 Indians, 1850 Arabs, and 780 mixed population. The climate is chiefly remarkable for its very dry character. In the interior it is healthy throughout the year, as compared with the coast belt, where, during the "Khariff" season—i.e., from about the 1st June to mid-September—the atmospheric conditions are exceedingly trying for Europeans, the effect on the nervous system being most pronounced. During this period terrific gales of sand-laden wind are prevalent, and the heat is intense, the thermometer registering 105° to 115° F. in the shade, and seldom falling below 100° at night. Sickness is most prevalent, however, during the months immediately preceding and immediately succeeding the "Khariff." During the months of November, December, January, and February the climatic conditions on the coast greatly improve.

THE CHILDREN'S BREAD.

Mr. H. J. Hibberd's little pamphlet—"Our Children's Bread as it Affects National Health and Land Reform" (Messrs. J. R. Stevens, Brockenhurst, Hants. Price 3d.; post-free, 4d.)—appears at an appropriate time, as it calls attention to the waste of valuable ingredients which occurs when the process of separation is carried too far in the preparation of flour. Arguing from the connexion between beri-beri and the use of "polished rice," Mr. Hibberd proposes a recasting of the standard of cereal foodstuffs on the principle of their vitamin content. This, of course, is going very far in the present state of our knowledge, but he will be pleased to see that under the new Regulations for the Control of Food the presence of vitamins in the flour should be secured. Commenting upon the extent to which we have relied for our food upon foreign sources, purchasing a considerable proportion of many things which can be produced in this country, he asks for the adoption of a co-operative system under which such food products as eggs, poultry, bacon, butter, cheese, fruit, and vegetables could be sent to collecting depôts and distributed through special centres at fixed prices. The times we live in, while they may indicate clearly the need for some such organisation, are not, of course, convenient for the construction of elaborate transport arrangements, and we do not see much hope at the moment for the recommendations in Mr. Hibberd's pamphlet, sensible as many of them are. Something of what he suggests may follow from the new State control of food.

The baking at home of bread, rolls, scones, and cakes has long figured prominently in cookery demonstrations by "The Pudding Lady" and her colleagues of the National Food Reform Association. Full particulars of publications dealing with the making of bread, its proper and economical use, and with the impoverishment, adulteration, and bleaching of flour, as well as of cookery classes—public or private—may be had by sending a stamped addressed envelope to the Honorary Secretary, 178, St. Stephen's House, Westminster, S.W.

OZONE IN RESPIRATORY DISORDERS.

REFERRING to an annotation published in our issue of Nov. 18th on "Tickling Cough," Messrs. Ozonair, Limited, of 96, Victoria-street, London, S.W., who supply ozone apparatus suitable for the purpose, have directed our attention to an interesting paper on "Ozone, Its Physiological and Therapeutical Action," by Dr. Donatien Labbé, Paris. Amongst other things, it is pointed out that ozone gives considerable relief in many cases of respiratory troubles. Instances are quoted also in which ozone has been shown to be of decided value in the treatment of whooping-cough. Details of treatment and of the issues are given in Dr. Labbé's paper.

R. G.—The Treasurer of the Belgian Doctors' and Pharmacists' Relief Fund is Dr. H. A. Des Vœux, 14, Buckingham Gate, S.W.

F. P. P. R.—The suggestion cannot be followed because to make compulsory a function which can only be discharged in certain physiological conditions would be impossible.

G. S. B. and Another.—Auto-examination of the lens and vitreous by means of a bright spot of light held a short distance before the eye was described by G. Donders (New Sydenham Society, 1864).

Pain Practitioner.—The case of the old-age pensioner, upon whom the present rise in the price of necessities in many instances inflicts great hardships, has been considered by the Government. An additional allowance is to be given to supplement the weekly sum provided under the Old Age Pensions Act, the maximum increase permitted being

2s. 6d. Briefly, no allowance will be given which will raise the income of an individual above 13s. per week, or of a married couple above 20s. No additional allowance will be given to those who, by reason of their other means exceeding 8s. per week are in receipt of less than 5s. per week pension, and the scale of the allowance will vary from 6d. per week to the half-crown mentioned above. Applications will have to be based upon special hardships suffered by the applicant, and will have to be made upon forms which will be obtained at Post Offices or from pensions officers. The latter will investigate each case and report upon it to the committees or subcommittees concerned.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Papers.—Mr. J. T. Carter: The Cytomorphosis of the Marupial Enamel-organ and its Significance in Relation to the Structure of the Completed Enamel (communicated by Prof. J. P. Hill).—Margaret Tribe: The Development of the Pancreas, the Pancreatic and Hepatic Ducts in *Trichosurus vulpecula* (communicated by Prof. J. P. Hill).—Mr. S. A. Smith: The Fossil Human Skull found at Talgai, Queensland (communicated by Prof. G. E. Smith).—Mr. H. J. Watt: The Typical Form of the Ootheca and its Variations (communicated by Prof. D. N. Paton).—Dr. A. D. Imms: On the Structure and Biology of Archetomopsis, together with Descriptions of New Species of Intestinal Protozoa, and General Observations on the Isoptera (communicated by Prof. S. J. Hickson).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MEETINGS OF SECTIONS.

Tuesday, Dec. 5th.

PATHOLOGY (Hon. Secretaries—Gordon W. Goodhart, Cecil Price-Jones): at 5 P.M.

Specimens:

Capt. Alfred R. Friel: Centrifugal Deposit of Urines showing "Amoeba Urinal Granulata" Cells.

Communications:

Dr. Christopherson: A Large Salivary Calculus from Khartoum.

Mr. S. G. Shattock: Pseudotuberculosis Silicoticum of Lip.

Mr. S. G. Shattock and Dr. L. S. Dudgeon: Attempts to Produce a Mixed Tumour.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

MONDAY.—5 P.M., Howard Lecture:—Prof. J. S. S. Brame: Coal and its Economic Utilisation. (Lecture II.)

WEDNESDAY.—4.30 P.M., Paper:—Mr. O. M. Whittaker: The Coal-Tar Colour Industry.

RÖNTGEN SOCIETY, Institution of Electrical Engineers, Victoria Embankment, W.C.

TUESDAY.—8.15 P.M., General Meeting. Paper:—Dr. Levy and Mr. Stenning: Some Remarks upon Fastilles.

CHILD STUDY SOCIETY LONDON, Royal Sanitary Institute, 90, Buckingham Palace-road, S.W.

THURSDAY.—6 P.M., Lecture:—Dr. Constance B. Long: Psycho-analysis in Relation to Children.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynaecological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whiphram); Gynaecological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. E. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. O. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. O. H. Hayton). Children Out-patients (Dr. T. R. Whiphram); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynaecological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M.,

Medical In-patients (Dr. E. M. Leslie). 3.30 P.M., Special Demonstration.—Mr. J. Howell Evans: Cases illustrating the Treatment of (1) Extensively Splintered Fractures; (2) Consecutive Osteomyelitis.

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

LONDON HOSPITAL, Mile End-road, E.

THURSDAY.—11 A.M., Dr. J. H. Sequeira: Early Diagnosis and Treatment of Syphilis. (Lecture III.) In connexion with this lecture Dr. J. McIntosh will give a Practical Demonstration of the Examination for Spirochetes and Wassermann Test.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

THURSDAY.—6 P.M., Chesterfield Lecture:—Dr. M. Dockrell: The Ringed Eruptions of the Skin.

EDITORIAL NOTICES.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C.

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INCREASED war expenses and cost of production necessitate an increase of the price of THE LANCET. Commencing with the first issue in the New Year, the price will be 8d. instead of 6d. The rates of subscription will remain as revised in October—

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Seward's Instruments.)

THE LANCET Office, Nov. 29th, 1916.

| Date. | Rain-fall. | Solar Radio in Vacuum. | Maximum Temp. Shade. | Min. Temp. | Wet Bulb. | Dry Bulb. | Remarks. |
|---------|------------|------------------------|----------------------|------------|-----------|-----------|----------|
| Nov. 23 | ... | 67 | 55 | 38 | 49 | 50 | Cloudy |
| " 24 | 0.03 | 62 | 53 | 50 | 53 | 53 | Overcast |
| " 25 | ... | 74 | 56 | 45 | 53 | 53 | Overcast |
| " 26 | 0.15 | 73 | 51 | 41 | 39 | 41 | Fine |
| " 27 | ... | 59 | 44 | 37 | 36 | 37 | Fine |
| " 28 | ... | 56 | 44 | 32 | 32 | 33 | Foggy |
| " 29 | ... | 50 | 47 | 33 | 44 | 44 | Overcast |

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

The following journals, magazines, &c., have been received:—
Clinical Medicine, Archives of Internal Medicine, Archives de Médecine et Pharmacie Navales, South African Medical Record, American Journal of Orthopedic Surgery, Revista Clinica, Journal of Anatomy, Mercy and Truth, American Journal of Obstetrics, Magazine of the London School of Medicine for Women, &c.

Communications, Letters, &c., have been received from—

A.—Dr. M. S. Ayoub, Aga, Egypt; Messrs. Armour and Co., Lond.; Ashton-under-Lyne District Infirmary, Sec. of; Australia Institute of Tropical Medicine, Townsville, Sec. of; Association of Infant Welfare and Maternity Centres, Lond., Chairman of; Messrs. Allen and Hanbury, Lond.
B.—Capt. A. G. Biggam, R.A.M.C.; Messrs. Burroughs Wellcome and Co., Lond.; British Orthodontic Co., Lond.; Messrs. Butterworth and Co., Lond.; Mr. D. H. Baria, Dibrangdhar, Capt. J. S. K. Boyd, R.A.M.C.; Messrs. Blinco and Sons, Ramsgate; British Medical Association (Queensland Branch), Brisbane, Asst. Sec. of; Dr. John Brownlee, Lond.; Messrs. Butterworth and Co. (India), Calcutta; Mr. H. Brown, Lond.; Mr. J. P. Barry, Lond.; Dr. G. Blacker, Lond.; Dr. W. A. Brand, Lond.; Mr. F. M. Bochet, Peterborough; Messrs. Bellante Bros., The Hague; Dr. B. Bell, Liverpool; Birmingham Bar and Trestle Hospital, Sec. of; Mr. W. Bryce, Edinburgh; Mr. E. Bugault, Paris; Sir John Byers, Belfast; Rev. J. S. Barber, Farnham; Mr. F. J. Burdon, Lond.; Dr. H. Boebowers, Olinda, Alizans; Mr. K. S. Bhat, Lond.
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D.—Lieut. J. S. Dunn, R.A.M.C.; Mr. R. Donald, Lond.; Messrs. A. de St. Dalmas and Co., Leicester; Dental Record, Lond., Publisher of; Director-General of Public Health, Sydney; Mrs. Dawson, Oxford; Mr. J. Dunlop, Lond.; Darlington Hospital, Sec. of; Dumfries and Galloway Royal Infirmary, Dumfries, Treas. of; Rt. Hon. Lord D'Abernon, Lond.
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G.—Mr. T. A. Graham, Lond.; Capt. A. D. Griffith, R.A.M.C.; General Press Cutting Association, Lond.; Grimsby County Borough, Town Clerk of; Dr. A. G. M. Grant, Grange-over-Sands; Mr. K. Goadby, Lond.
H.—Mr. S. Honeyman, Lond.; Dr. J. Haddon, Denholm; Dr. F. Herniman-Johnson, Lond.; Messrs. J. Haddon and Co., Lond.; Messrs. Hirschfeld Bros., Lond.; Messrs. Hodder and Stoughton, Lond.; Mr. N. B. Harman, Lond.; Dr. C. E. Hetherington, London-derry; Dr. H. C. Highet, Bowdon; Dr. C. M. Harston, Boxhill; Dr. F. Heatherley, Manchester; Dr. H. J. Hibberd, Brockenhurst; Dr. C. G. Hawthorne, Lond.; Messrs. J. F. Hartz and Co., Toronto; Messrs. C. J. Hewlett and Co., Lond.; Messrs. Holt and Co., Lond.
I.—Mr. Ingram, Dufftown; Mr. J. W. Ingles, Cliffe; Insurance Committee for the County of London.
J.—Jeyes' Sanitary Compounds Co., Lond.; Mr. F. Jones, Lond.
K.—Dr. F. H. Kelly, Berkhamstead; Capt. T. Kelly, R.A.M.C.; The Kny-Scheerer Corporation, New York; Dr. A. Kinsey-Morgan, Bournemouth.
L.—Dr. G. C. Low, Lond.; Messrs. Lee and Nightingale, Liverpool; Messrs. H. K. Lewis and Co., Lond.; Livingstone College Hospital, Leyton, Principal and Hon. Resident Medical Officer of; Lieut. C. N. Longridge, R.A.M.C.; Messrs. Leathwaite and Simmons, Lond.; London Dermatological Society, Hon. Sec. of.
M.—Dr. H. B. Mills, Philadelphia; Capt. O. H. Mills, R.A.M.C.(T.); Mr. N. C. Macnamara, Lond.; Nurse M. Hanwell; Messrs. Z. P. Maruya and Co., Tokyo; Monmouthshire Asylum, Aber-gavenny, Sec. of; Maidenhead Union, Clerk to the; Manchester City Medical Officer of Health of; Mount Vernon Hospital for Consumption, Lond., Sec. of; Messrs. C. Mitchell and Co., Lond.; Maltine Manufacturing Co., Lond.; Maruzen Co., Tokyo; Mr. J. Y. W. MacAlister, Lond.; Miss Norah March, Lond.; Mr. W. J. Middleton, Bournemouth; Mr. J. E. R. McDonagh, Lond.; Dr. D. M. Mathieson, South Shields; Midland Counties Herald, Birmingham.
N.—National Food Reform Association, Lond., Hon. Sec. of; Nobel's Explosives Co., Pembrey; Dr. A. Newsholme, C.B., Lond.; National Union of Trained Nurses, Lond., Hon. Sec. of.
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W.—West Kent General Hospital, Maidstone, Sec. of; Dr. N. Wood, Lond.; Mr. C. Worth, Lond.; Messrs. J. Walker and Co., Warrington.

Some Practical Observations

ON THE

INJURIES OF WAR.

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(Continued from p. 334.)

LODGMET OF MISSILES.

WHEN the missile has lodged it must be located by the X rays. And this should be done in all cases where there is no wound of exit, unless the evidence of removal by operation is clear. A small superficial wound may really be a penetrating one, and a foreign body easily overlooked. Much has been written on the question of operating on these cases, and as they widely differ only general principles can be mentioned.

As a rule, when the bullet or piece of metal is causing no inconvenience and deeply seated, as in the buttock, or near the neck of the femur, it had best be left alone. The same rule is wise when the missile is in the retroperitoneal tissue or mediastinum. This practice is very unpopular with the patients, who have vague ideas they are being "poisoned" by the bullet, and are deprived of the legitimate pride of showing it to visitors or relatives. Deeply seated bullets are easily missed by the operator. I have been generally successful in these cases, but must confess to some most annoying failures, where, though I was certain I was close to the piece of metal, I could not find it, even after a prolonged and extensive search. Where the operator is uncertain whether he is touching bone or bullet, the telephone probe is very useful. If the missile be associated with compound fracture, it should always be removed if possible, but this is not easy, and I have been defeated in several such cases, in completing my purpose.

The size of the missile has always to be considered. Where one would remove a large jagged piece of shell, a small scale of metal may be left alone. Again, a deep and risky operation may be undertaken when a bullet is pressing upon a main nerve, or is in the cavity of a joint. The larger the piece of metal, the more certainly it can be found in a deep operation. Small bullets may be most difficult to detect.

In wounds of the face pieces of metal, even of large size, may unsuspectingly lodge in the antrum, the nares, or the various fossæ, and their existence should always be suspected unless negatived by a skiagram. The lodgment of bullets in bone, especially when near a joint and associated with splintering, usually necessitates removal. But all these cases afford very diverse problems, and I believe I only voice the opinions of many that deeply seated bullets and small pieces of metal are best left alone, unless there are distinct indications for removal, and the deeper the missile is lodged the greater the difficulty the surgeon may find in extraction. When bullets or pieces of shell are superficially situated they can be easily removed, and the same is true when they can be felt with a probe or examining finger at the bottom of the wound of entry. When bullets are lodged in the carpus or tarsus they are usually associated with shattering of the bones, and it is wise to remove them, along with all the "splinters" and fragments of bone which can be detected. The subsequent healing of these wounds is most tedious, and the results often unsatisfactory.

GUNSHOT WOUNDS OF THE JOINTS.

The gravity of these injuries is in proportion to the size of the articulation involved and the amount of damage done to the bones and soft parts. In these cases, septic arthritis of a very severe nature ensues, burrowing abscess soon occurs, and, especially in the case of the ankle or knee, gangrene is apt to ensue. Conservative surgery may be pushed to extremes in the upper extremity, and primary excision of the shoulder and elbow, with very free drainage and flushing, gives good ultimate results, often, indeed, exceedingly good. No. 4887.

results. Mobility of the parts is always aimed at in the joints of the upper extremity. In the case of the knee, if the articular surfaces are shattered, bony ankylosis in a good position should be aimed at. A stiff, straight knee is surprisingly useful, but a bent joint is the reverse. In a shattered knee, if it be determined to save the limb, all fragments of bone, cartilage, and cloth should be removed, and large tubes inserted into the synovial pouches, especially into the inner pouch, beneath the vastus. Very free and thorough flushing should be carried out. The limb, if possible, should be slung and the flushing maintained daily without moving it from the supporting splint. The pain is always very severe, and this is one of the few instances in which I advocate an occasional injection of morphia and atropine. These cases are difficult to manage, and the patient is often clamorous for amputation, but in a young and vigorous subject ankylosis will almost always ensue if the surgeon persists in his conservative efforts. In the case of the shoulder very extensive resections can be done and yet a useful limb ensue. In a recent case the head of the humerus and parts of the clavicle and scapula were removed with excellent ultimate results. In bullet wounds of the hip, or joints of the pelvis, especially the sacro-iliac joint, I have found great difficulties. It is here very difficult to remove all the shattered bone, and necrosis of the edges of the large portions left is very apt to ensue, and cause subsequent troublesome discharging sinuses. The original wounds may be enlarged and all loose fragments removed, with very free drainage, and any subsequent abscess evacuated. In the long convalescence, exposure of the patient to continuous sun and air, with a full diet, is very important. Most of these cases get well in the end, but "the end" is often far off.

In bullet wounds of the tarsus the subsequent healing is very tedious and troublesome, a sinus through the foot obstinately persisting. The bones become affected with chronic osteitis, and a solid œlema with matted tendons and impaired movement persists. In some of these cases, I believe, a well-executed, subastragaloid amputation would give in the end better results than an attempt to preserve a swollen and deformed foot, upon which subsequent locomotion is painful and distressing.

SECONDARY HÆMORRHAGE.

In the septic and sloughing wounds of the present war this most troublesome and difficult complication is only too frequent. I believe I have seen more of these cases in recent practice than in all my past hospital experience in London. Secondary bleeding in septic amputations is always to be feared, and I think it is fostered by the practice of uniting the flaps at the time of operation. It is far wiser to leave the stump "open" for the first two or three days, packing the cavity with saline-soaked dressings. When the surfaces seem healthy chloroform can be given, and the sutures, previously inserted, tightened and the parts drawn together. I can look back upon at least two cases where bad results occurred through my mistaken policy in attempting too early union of the flaps. Should the main vessel give way, and the bleeding be fortunately controlled in time by the elastic band, it is better to tie the vessel some inches higher up than attempt again to secure its sloughy end. When secondary hæmorrhage occurs from deep septic wounds the parts must be laid open and the danger faced. Plugging, pressure, and "styptics" are only temporary expedients, and they seldom succeed and make subsequent operation more difficult. When the parts are exposed and flushed with hot water the bleeding will often cease. But if the surgeon can detect a definite source he may try to control it. The parts are so disintegrated, the ligature will seldom hold when applied in the usual way; and an excellent device is to take a curved needle and pass it under the tissues, across the course of the vessel, and tie a silk ligature firmly, including some of the soft parts. Forcible pressure is also very useful, and some curved and T-shaped pressure forceps should be in every operating case. These should be applied and left on for four days, and their use will often stop a deeply seated difficult hæmorrhage when nothing else will do it. Acupressure may also be sometimes useful.

In exceptional cases the main vessel above may be tied. Thus, in a case of profuse secondary hæmorrhage from a sloughing bullet wound through the wrist, where the hand

was enormously swollen, I tied the brachial artery. The hæmorrhage lessened and ceased, and the operation markedly relieved the swelling and pain in the hand. Amputation would have been the only other resource. It was an ancient practice to tie the brachial in severe inflammatory conditions of the hand, and I am not sure that the practice is sufficiently resorted to.

A more rare cause of secondary hæmorrhage is the erosion of an artery from pulsating against a "spike" of carious bone. This is apt to occur in the popliteal space. In a case of fracture of the femur in its lower third, which had been dealt with at the Cambridge Hospital, the patient was admitted at Exeter with persistent bleeding from a small sinus near the knee, the hæmorrhage occurring in occasional repeated "bursts." The condition of the parts justified amputation. The fracture was united, but a small hole was found in the popliteal artery, where it impinged upon a projection of carious bone.

EMBOLISM.

Considering the lacerated veins and the soft septic clots in them in, let us say, a bad gunshot fracture, it is astonishing how infrequently embolism occurs. I have seen several very instructive cases of pulmonary embolism—not the extensive embolism of the main vessel leading to death, but small embolism leading to a sudden and acute localised pneumonia. The ordinary signs of consolidation were present, with pleuritic friction, and the symptoms were acute with high intermittent temperature and profuse sweating. The symptoms were very similar to acute tuberculosis, for which, when the trouble is in the apex of the lung, the condition is apt to be mistaken. So far as I was able to ascertain, the expectoration was purulent, and had not the well-known "rusty" or prune-juice appearance. Dr. R. V. Solly found no tubercle bacilli, but abundant streptococci, in the sputa. The cases all did well, after being acutely ill for some days. I have had no case of "secondary" empyema, though primary cases have been treated, after direct wound of the thorax. Neither have I seen any cases of cerebral embolism after injuries of the vessels in the neck.

PERFORATIONS OF BONE BY BULLETS.

A number of these cases have come under notice, especially in the tibia or humerus. Some splintering of bone in the vicinity of the track of the missile is usual, and necrosis along the channel is a common after-result. Sound healing is very tedious, and in one case, where the tibia had to be perforated by the trephine to remove a bullet impacted at the back of the bone, took over four months. When once all dead bone has been removed, fibrosis of granulation tissue will ensue, and a dense sclerosis of bone round the injured part maintains the integrity of the shaft. The only treatment so far as I know in these cases is to expose the patient to sun and air, to feed him well, and to soak the part daily in a saline bath. At intervals of a month or so the cavity in the bone, for there usually is a cavity, should be curetted with a sharp spoon. When no evidence of osseous disease exists strong solutions of silver nitrate should be injected on alternate days. All my cases have finally recovered, but at the expense of great time and trouble and much weariness on the part of the patient.

In the "mastoid operation," which I often formerly performed, I used to dissect up a long flap and pack it down into the cavity. In this way "skin-covering" of the extensive cavity in the bone was certainly brought about. I have adopted this method in one case of cavity in the tibia. I think, on the whole, that a better and stronger bone will result by the exercise of time and patience. In former days I also tried "decalcified" sponge and filling the cavity in a bone with fresh "bone-chips." But I was not impressed with the success of these methods. The same may be said of the injection of liquid paraffin.

TREATMENT OF SINUSES.

The usual cause of an obstinate sinus is the presence of dead bone, and when this is fixed and very deep, as in the pelvis, only time and the use of the curette are of avail. Every effort should be made to remove the cause. It is commonly advised to lay all sinuses open, and when superficial and not involving important parts this practice is justifiable. In deep sinuses I have found the injection of nitrate of silver (20 gr. to the ounce) useful. I have also used the "liquor

epispasticus." A still more efficacious remedy is the electric cautery. The wire should be passed to the depths of the sinus and gradually withdrawn, searing its walls. But all these measures are useless if bone, pieces of metal, clothing, or an elusive drainage-tube remain at the bottom. One striking case, where numerous deep sinuses in the groin and buttock had persisted for many months, was finally cured by persistent baths and the injections of the strong silver nitrate carried out by Dr. Robin, of Sidmouth, who then assisted me. Numerous fragments of bone were removed by the curette, and a skiagram showed destruction and disintegration of the head of the femur, with pathological displacement. In this case, had a "great" operation been performed by laying open the sinuses and hip-joint I believe the emaciated and feeble youth would have succumbed. This case is only alluded to shortly as an additional proof that time and patience will usually overcome conditions which may appear quite desperate, and before submitting enfeebled patients of this class to extensive and desperate operations this view of the case should always engage the attention of the surgeon. Sinuses should never be probed without a reason, as to detect dead bone or estimate their depth.

GUNSHOT WOUNDS AND FRACTURES OF THE FACE AND JAWS.

The leading features to remember are the extraordinarily rapid union of wounds in this region and the importance of not uniting the wound in the soft parts over shattered bone and pieces of impacted metal. This is especially likely to occur in the antrum and nares. The bone destruction may be terrible. In one young soldier I removed the upper jaw, half the lower jaw, the palate, part of the ethmoid and the pterygoid plates. The soft parts were united over the huge gap, and the resulting deformity was far less than might have been expected. It is important to preserve the orbital plate of the maxilla, or, if this is impossible, to maintain intact the periosteum and suspensory ligament of the eyeball, or the latter gets displaced downwards. In the "rush" of early cases I had to treat some bad fractures of the jaw without any special apparatus. I had recourse to the old moulded splint of gutta serena and jaw bandage which I had not applied for many years. All loose fragments were removed with forceps, and Mr. Acland gave his aid for the loose and injured teeth. The results in these cases were excellent, and an indication of what can be done with very simple measures in very difficult cases. In fractures of the jaw extensive comminution is very frequent. I think it well to expose the parts by an incision along the inferior border and remove all the fragments of shattered bone. This is very important, or after-suppurating and obstinate sinuses are sure to persist. Pus is very apt to burrow down the neck under the cervical fascia, and I think it well to drain through the submaxillary incision. In past days I have drilled and wired the bones, but I am not sure the results were better than when simply treated by a splint. In these cases, however, the aid and skilful appliances of the dental surgeon and mechanic are very essential, and moulded metal or wire splints very advantageous. In all instances the mouth should be constantly washed out with an antiseptic lotion. Permanent facial paralysis is often found in wounds of the face, and is very unsightly. When the soft parts are extensively blown away the most hideous and distressing deformities ensue. What plastic surgery cannot effect must be remedied by skin-coloured masks. These can often be advantageously supported on a spectacle frame. It is fortunate that an institution is to be opened where the patient and surgeons get the advantage of mechanical skill and appliances, which are only to be found among trained and ingenious surgical mechanicians, and they alone can cope with such cases as these.

INJURIES OF THE NERVES.

These are far more serious and extensive than most of us have ever experienced in civil practice. The division of nerve trunks by glass wounds or accidental stabs were, as a rule, satisfactorily dealt with by one of the various methods of immediate suture. Bullets and pieces of shell unfortunately not only divide the nerves, but smash them, and carry away entire portions. In extreme cases the main nerves, as the brachial plexus or the sciatic, are actually clean blown away in portions. The results are very disastrous. Constant pain, especially when cicatrization occurs, and

various forms of paralysis below, with serious deformities and "nutritive" changes in the joints, are apt to ensue. Every effort must be made by splints and manipulation to prevent these deformities. But I have found this in practice very difficult to effect. In some extreme cases amputation of the deformed and crippled limb is perhaps the best treatment. Immediate attempts to unite nerves in a septic wound usually fail. If one waits until the parts have healed, and there is no risk of setting free fresh sepsis, one is confronted with difficulties which may be great. The amount of cicatricial tissue and the matted parts make the structures indistinguishable, and when large veins are adherent in the mass, as in the axilla or popliteal space, wounds or tears in them may be inflicted by the most careful operator. The most successful cases are those where a nerve is bound down by scar tissues and can be released. Frequently, also, the loss of nerve substance is so great that transplantation of a portion of nerve from elsewhere has to be adopted. A layer of fascia dissected from the neighbourhood is, I think, the best membrane to surround a divided nerve, should the surgeon be able to unite it. On the whole, my experience of these cases has been distinctly unfavourable. Other surgeons may have had better results.

INJURIES OF THE HEAD.

I have seen a number of scalp wounds and some depressed fractures excellently treated, before they came under my notice, by the surgeons at the front. The patients attributed their escape from death to the use of the metal helmet, which explains the comparative slightness of many of these injuries. So few cases of missiles lodged in the brain have come under notice that I do not feel justified in remarking upon them, and my previous experience of such injuries has been slight. But I wish to reiterate my impression of the excellence of the surgery at the front in the "head cases." In one instance bone had been removed and a wounded lateral sinus plugged. A large granulating wound remained and cerebral pulsations could be seen at its depths. This was closed by implanting flaps of scalp, and the final result was very good, recovery being complete.

WOUNDS OF THE THORAX.

Many of these are superficial, the bullet glancing off the ribs. We have had several cases where the soldier has been shot clean through the thorax. The only evidence of lung trouble has been slight pain and hæmoptysis. All these cases have done well under rest and cleanliness to the superficial wounds. In two cases there was some hæmothorax, but this was not interfered with. I have also seen cases where the bullet had entered over the cardiac area, or great vessels, and yet nothing untoward occurred. These cases are very extraordinary, and it is difficult to explain them. Primary empyema, due to direct wound, has been dealt with by the usual methods, and the cases, though tedious, have done well. A "masterly inactivity" is the best policy in penetrating wounds of the thorax. Septic pneumonia is always to be feared. I have only seen one case hitherto.

WOUNDS OF THE ABDOMEN.

My experience of these injuries has been also small. These serious wounds are often fatal, and of necessity need immediate treatment in the base hospitals. A most instructive article on these cases was published by Mr. Crisp English in THE LANCET of Oct. 28th, 1916, p. 746. I saw one case where a bullet had entered from behind, perforated the kidney, and escaped anteriorly. Beyond some hæmaturia nothing untoward occurred. In another remarkable case a bullet entered above the pelvis posteriorly and emerged at the inner side of the thigh. Urine passed from the wound in the thigh in large quantities at first, according to the report, but only scantily under my own observation. There were no symptoms of extravasation. I laid the wound in the thigh open for some inches and inserted a large tube. The patient made a good recovery. I have seen no bayonet wounds. These are, no doubt, treated at the front, but I am of opinion that the Germans suffer more from these injuries than our troops.

INJURIES OF THE SPINE.

When the spinal cord is smashed by the missile recovery of motion is hopeless, though some sensation may be found and maintained. The survivors of these injuries will form a large proportion of the inmates of "homes," which I trust

may be provided for the heroic sufferers after the war. They need the customary care and nursing familiar to us in similar cases in civil life, especially in the prevention of bed-sores and attention to the condition of the bowels and bladder. Caution must be exercised in the prognosis of these injuries. In some of them the cord is really bruised, not severed. The symptoms at first are very complete, and the case appears hopeless. But after some weeks, when effused blood becomes absorbed, recovery begins to set in and may be well-nigh perfect. This has happened in several of my cases, and notably in one man who was shot through the neck. Total paraplegia existed below with diaphragmatic breathing. After many months this patient was able to walk with the aid of a stick, and his complete recovery seemed only a matter of time. I have had other cases where partial recovery only occurred, but the final conditions were better than one might have anticipated from the gloomy appearance of the early symptoms. It is exceedingly difficult to know whether or not to operate in these cases. The operation for fracture dislocation of the spine which I have performed in past years, and which I have more often seen others perform, was, to my mind, usually disappointing in results, and certainly did not have the measure of success some of its enthusiastic advocates claimed. A careful skiagram should always be executed, and if the appearances point to shattered bone and pressure on the cord, this is an argument for operation. But if the cord is smashed by the bullet, no good results can be expected. I think with the utmost care and reflection such operations must be experimental, and it is impossible to promise beforehand what amount of good they may be expected to bring about. Also when the results are good, it is difficult to affirm that they would not also have been as good without operation. This class of operation will always be favoured by those who regard operations as of more certain value than the reparative powers of nature. Indications of pressure on the cord are the best arguments for its adoption.

An important class of injuries to the back and spine are those where the patient is crushed and bruised beneath tons of debris of timber and earth, by the explosion of a mine or the devastations of a "Jack Johnson." In these cases the patient, "when dug out alive," exhibits severe nerve shock, and for weeks or months may be practically unable to move. The spinal muscles are sometimes lacerated. Definite hæmatoma exists, or evidence, in the discolouration of the skin, of extensive bruising. Signs of injury to the cord, as loss of motion or sensation below, are absent. I have suspected in some of the worst of these cases that hæmorrhage between the membranes and the cord has really existed. In other cases the evidence of injury is not so marked. The neurasthenic element is present, and the symptoms remind one of the "railway spine" with which we were familiar in civil practice, and which provided ample material for differences of opinion amongst surgeons, and were a source of emolument to practitioners of the law. In these cases, if rest and massage does not avail, movements of the spine under anaesthesia are often of surprising efficacy. The body should be strongly and repeatedly flexed and extended over firm pillows or sand-bags. Doubtless adhesions about the small joints and deep muscles are ruptured by these manipulations. If any painful spots persist on pressure or percussion the actual cautery should be lightly applied and also has a remarkable influence for good. Exercises and change of air with encouragement usually do the rest. But these cases, if allowed, will remain supine and helpless for an indefinite time, especially when made the objects of injudicious sympathy and provided with cigarettes, novels, and wool-work. They need mental stimulation and encouragement, as well as actual local treatment.

(To be concluded.)

THE LATE MR. C. D. RUDD'S BENEFACTION.—The death of Mr. Charles Dunell Rudd has brought to light the fact that he was the donor of the new buildings of the Mount Vernon Hospital for Consumption and Diseases of the Chest at Northwood. The total cost of this institution on its admirable site, with full equipment for treatment, exceeded £200,000, and it was Mr. Rudd's great wish to see the completion of an extension giving a further 120 beds for women and children. This hope was not realised, as after the foundations had been laid further building was prevented by the outbreak of war.

AN INVESTIGATION INTO THE AGGLUTINATING PROPERTIES OF CERTAIN SERA AGAINST *B. TYPHOSUS* AND *B. ENTERITIDIS* GAERTNER (DELÉPINE, 7160).

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THE present investigation was undertaken at the suggestion and under the supervision of Professor E. J. McWeeney, as part of the work done at the Bacteriological Department, University College, Dublin, National University of Ireland, in connexion with the scheme of the Medical Research Committee.

A comparatively large number of sera was sent in to this laboratory by the Irish military authorities for the Wassermann test, and as these sera are for the most part taken from men who had received antityphoid inoculation it was thought a good opportunity of estimating their agglutinating power for *B. typhosus* by Dreyer's method, and to find out whether any of them agglutinated a certain strain of Gaertner (Delépine, 7160). As a result of investigations made by Delépine and Dawson¹ with a culture of *B. enteritidis* Gaertner (7160), isolated by the former, the claim is made that this bacillus 7160 is agglutinated by the serum of patients suffering from enteric fever and is unaffected by the sera of antityphoid-inoculated individuals. According to these authors, therefore, 7160 can be used as a valuable means of making a definite diagnosis of enteric fever in a febrile antityphoid-inoculated person when the mere agglutination of typhoid bacilli alone cannot be relied upon. To estimate fully the value of this observation it would be necessary to test the following sera for the presence or absence of agglutinins for 7160: Class A, the sera of normal non-inoculated persons; Class B, the sera of inoculated, though otherwise normal persons; Class C, the sera of non-inoculated enteric fever patients; and Class D, the sera of enteric fever patients who had been previously inoculated.

The sera which were submitted to me for examination fell under Class B—namely, the sera of persons who had received antityphoid inoculation and who were at the time not suffering from enteric fever or food poisoning. The only way in which the persons differed from normal healthy inoculated individuals was that they either had or were suspected of having syphilis. The question as to how far the presence or absence of syphilis may be considered to affect the agglutinin content of a serum will be dealt with later on.

At the beginning of the investigation it was thought sufficient to obtain information as to the date of the last inoculation, together with such clinical data as appeared important during the course of the research. It was soon realised, however, that much would be gained by obtaining more complete details, such as the number of times the men had been inoculated and the existence of any previous history of enteric fever. Also, in view of Tidy's contention² "that pyrexia or pyrexial conditions lead to the removal from the serum of agglutinins due to inoculation," the importance as to whether the men were in the secondary (frequently febrile stage) of syphilis became apparent.

I have to express my thanks to the officers of the Royal Army Medical Corps at Portobello Hospital for their kindness in furnishing me with the details of the cases.

Technique.—The method adopted for all cases was the quantitative macroscopic agglutination test of Dreyer, which is advocated by Ainley Walker³ and others, by means of which the agglutinin content of each serum is stated as the number of standard agglutinin units per 1 c.c. of serum. In the case of *B. typhosus* a standard agglutinable culture was prepared, stored in bulk, and standardised, 250 c.c. being taken as required, each 250 c.c. being again standardised against standard culture and antiserum kindly provided by Dr. Gardner, of the Standards Laboratory, Oxford. The positive results obtained with the sera against the standard typhoid culture are stated as standard agglutinin units per 1 c.c. of serum examined.

In the case of *B. Gaertner* (7160) a culture was used which had been kindly forwarded by Professor Delépine to Professor McWeeney. From this a uniformly agglutinable formalinised culture was made. This could not, however, be standardised in the same manner as in the case of *B. typhosus* owing to the lack of a standard specific antiserum, so that the results in the case of this micro-organism are expressed as the highest dilution of serum with which agglutination was obtained. This culture was found to give uniform results with positive and negative cases, the positive agglutinations exhibiting the same naked-eye clumping as the Oxford standard agglutinable typhoid cultures did with antityphoid serum. This formalinised 7160 culture was not affected by the Oxford standard antisera for *B. typhosus*, *B. paratyphosus* A and B, when put up in the dilutions recommended for standardisation of cultures.

In dealing with a comparatively large number of sera at a time it was found advisable to modify the details of the original Oxford method to some extent, though its general scheme was followed throughout.

The primary 1 in 10 dilution of serum was made with calibrated pipettes, the drop-method being used for the subsequent dilutions. The saline solution for making the further dilutions of serum was kept in a double-controlled burette. This was made by attaching the dropping pipette to a separating funnel (with tap) by means of a short length of rubber tubing, a screw clip being fixed in this connexion. The whole apparatus was fixed in an ordinary burette stand with one holder for the funnel and another to steady the dropping pipette. A double control was thus maintained—viz., (1) the glass funnel tap for the main flow of saline; and (2) the screw clip for regulating the drops.

In practice the advantages of this reservoir dropper can be set down as follows:—(a) The dropping pipette is kept vertical and delivers uniform drops at a uniform rate. (b) It is easy to manipulate, as many racks full of agglutination tubes can be filled as required by moving each tube in turn beneath the dropper. (c) If at any time it is found necessary to stop the flow of saline the funnel tap can be turned off without disturbing the screw clip, which regulates the size of the drop. (d) The dropping pipette can be readily detached and used for adding the serum, so that the same dropping pipette is used throughout the experiment.

It was also found that the original zinc racks provided with the Oxford outfit (though extremely useful) take up a large amount of space in a water-bath, and if there be much variation in the size of the agglutinating tubes used the mixtures of saline, serum, and culture, though of the same volume, will stand higher in some tubes than in others, and thus may be partly above the level of the water in the bath. To obviate these two drawbacks a sheet of strong cork half an inch thick was perforated with holes half an inch apart, to hold 15 to 20 rows of five tubes. The tubes are pushed through the cork as far as their rims, and when the whole rack is placed in water it floats, with the important part of the tubes submerged, the cork rack taking up much less space than would be required by the requisite number of zinc racks. Index numbers can be readily marked with a grease pencil on the cork, if it be first rubbed over with a little xylol.

The water-bath was kept at 52° C. for two hours, and the results read off by artificial light.

It may be here noted that by Dreyer's method the variations in the intensity of the agglutination are very striking at different stages of dilution between the strongest positive reaction and a negative. On several occasions zone phenomena were observed—viz., with some sera no agglutination occurred in the 1 in 25 dilution, when marked clumping was present in the 1 in 50 or over.

Material for examination.—The sera were not particularly selected, each batch being dealt with in a routine fashion as they were received. Consequently, in drawing up the results the sera have to be grouped under various heads. The number of specimens of serum examined was 495. With regard to antityphoid inoculation, they may be divided into the following groups:—

| | |
|---|-----|
| Group I.—Sera of men about whom definite information as to number of inoculations and date of last inoculation was obtained ... | 143 |
| Group II.—Sera of men about whom information as to date of last inoculation only was obtainable ... | 127 |
| Group III.—Sera of men known to be non-inoculated ... | 32 |
| Group IV.—Sera of men about whom no information as to inoculation was obtainable ... | 64 |
| Group V.—Repeated examination of sera which had already been examined previously ... | 129 |

Results.—It is proposed to deal with the results obtained in the following order.

I. *Agglutination results with B. typhosus*.—A. General results (inoculated cases, Groups I. and II.). B. Factors which influence the standard agglutinin content of the sera of inoculated individuals (Groups I. and II.). C. Influence of syphilitic lesions upon the typhoid-agglutinating power of the sera of antityphoid-inoculated men (Groups I. and II.). D. Remarks on the sera of inoculated cases, examined more than once for agglutinins against *B. typhosus* (Groups I. and II.). E. Results with cases known to have not been inoculated (Group III.).

II. *Agglutination results obtained with B. enteritidis of Gaertner (Delépine, 7160)*.—A. Sera of antityphoid-inoculated individuals (Groups I. and II.). B. Influence of antityphoid inoculation on the agglutinating power of sera for bacillus 7160, Delépine (Groups I. and II.). C. Influence of syphilis on the agglutinating power of sera of antityphoid-inoculated individuals for Delépine, 7160 (Groups I. and II.). D. Remarks on sera (of inoculated cases) examined more than once for agglutinins against Delépine, 7160 (Groups I. and II.). E. Results with cases definitely known to have been uninoculated (Group III.). F. Results with sera of cases about whom information as to inoculation was not obtainable (Group IV.) and total results with 7160 (Groups I., II., III., and IV.).

III. *General results with cases which had a previous history of typhoid fever* (which occurred among Groups I., II., and III.).

IV. Summary.

I. AGGLUTINATION RESULTS WITH *B. TYPHOSUS*.

A. General Results (Inoculated Cases, Groups I. and II.).

Total number of sera of inoculated cases examined, 270. These may be divided into two groups—viz.:—

Group I. The sera of men about whom definite information as to number of inoculations and date of last inoculation was obtainable... 143

Group II. The sera of men about whom information as to date of last inoculation only was obtainable... 127

Note.—In the above cases the length of time which had elapsed between the date of inoculation and the date of examination was from one month to eight years.

General results: Group I.—Number of sera 143, of which 125 (87.5 per cent.) gave agglutination for *B. typhosus*, and 18 (12.5 per cent.) gave no agglutination.

Group II.—Number of sera 127, of which 112 (88.2 per cent.) gave agglutination for *B. typhosus* and 15 (11.8 per cent.) gave no agglutination.

When the general results of these two groups are combined:—Total number of sera of inoculated cases, 270; of these 237 (87.1 per cent.) gave agglutination with *B. typhosus*, and 33 (12.9 per cent.) gave no agglutination.

Results in Positive Cases: Group I.

| No. of cases. | Contained up to— | Per cent. of total. | No. of cases. | Contained up to— | Per cent. of total. |
|---------------|------------------|---------------------|---------------|------------------|---------------------|
| 77 | 25 a.u. | 53.9 | 1 | 225 a.u. | 0.7 |
| 25 | 50 " | 17.5 | 1 | 450 " | 0.7 |
| 10 | 75 " | 7.0 | 1 | 500 " | 0.7 |
| 5 | 100 " | 3.5 | 1 | 550 " | 0.7 |
| 2 | 175 " | 1.4 | 1 | 900 " | 0.7 |
| 1 | 200 " | 0.7 | | | |

Group II.

| | | | | | |
|----|---------|------|---|----------|-----|
| 33 | 25 a.u. | 26.0 | 2 | 250 a.u. | 1.6 |
| 34 | 50 " | 26.7 | 2 | 275 " | 1.6 |
| 16 | 75 " | 12.6 | 3 | 300 " | 2.3 |
| 3 | 100 " | 2.3 | 1 | 550 " | 0.8 |
| 4 | 125 " | 3.2 | 1 | 575 " | 0.8 |
| 5 | 150 " | 4.0 | 1 | 725 " | 0.8 |
| 3 | 200 " | 2.3 | 1 | 900 " | 0.8 |
| 1 | 225 " | 0.8 | 2 | 1000 " | 1.6 |

Groups I. and II.

| | | | | | |
|-----|---------|------|---|----------|-----|
| 110 | 25 a.u. | 40.7 | 2 | 275 a.u. | 0.7 |
| 59 | 50 " | 21.8 | 3 | 300 " | 1.1 |
| 26 | 75 " | 9.7 | 1 | 450 " | 0.3 |
| 8 | 100 " | 3.0 | 1 | 500 " | 0.3 |
| 4 | 125 " | 1.4 | 2 | 550 " | 0.7 |
| 5 | 150 " | 1.8 | 1 | 575 " | 0.3 |
| 2 | 175 " | 0.7 | 1 | 725 " | 0.3 |
| 4 | 200 " | 1.5 | 2 | 900 " | 0.7 |
| 2 | 225 " | 0.7 | 2 | 1000 " | 0.7 |
| 2 | 250 " | 0.7 | | | |

a.u. = Agglutination units per c.c.

B. Factors which Influence the Standard Agglutinin Content of the Sera of Inoculated Individuals.

It has been abundantly proved by numerous workers, one of the most recent being Dakeyne,⁵ that two factors influence the presence of agglutinins in the blood of inoculated individuals—namely, (1) the time elapsed between date of inoculation and date of examination of blood; and (2) the number of inoculations the person has received. Generally speaking, the more recently men have been inoculated the stronger will be the agglutinating power of their serum for *B. typhosus*; also fewer sera will be met with which may fail to agglutinate this bacillus. In addition, men who have been inoculated twice have a much greater chance of developing and retaining a reaction than those who have been inoculated once.

The majority of these results have been obtained by the microscopical method of performing Widal's reaction, and, as is pointed out by Dreyer and Ainley Walker,² the results obtained by different workers are not strictly comparable, as cultures of different strains of the same organisms are well known to vary in their agglutinability. Furthermore, a more or less variable standard of the actual strength of a given serum has to be adopted, such as strong reaction, moderate reaction, &c., with certain dilutions of serum. All workers will agree as to whether a serum gives a positive or negative reaction, and the majority will agree as to the difference between a strong and a weak reaction, but in gauging the finer differences between these two the personal element, together with the varying conditions under which different experiments may be carried out, render the results obtained by different workers not strictly comparable. On this account more stress has necessarily been laid upon the percentage of negatives obtained in one series of cases as compared with another, rather than a comparison of the degree of agglutinating power obtained with various positive sera.

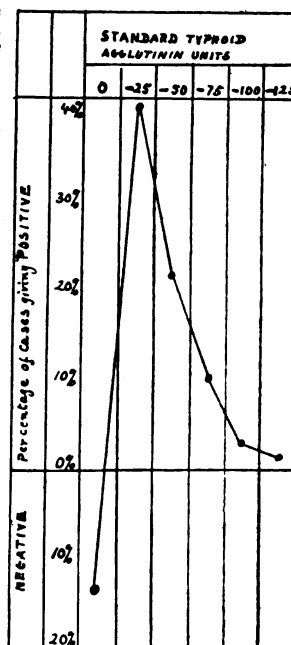
By Dreyer's macroscopic standard method results can be uniformly recorded, and it has the distinct advantage that, in addition to being able to state that a case is positive or negative, it enables one to give an exact estimate as to the strength of a given serum in standard units. In addition, it is possible to estimate accurately the effect of time and the effect of the number of inoculations, on the serum of inoculated individuals which give a positive Widal's reaction.

Influence of number of doses of antityphoid vaccine on agglutinin content of sera of inoculated men.—Firstly it is necessary to determine

what is the average agglutinin content of the sera of inoculated persons. This can be studied from the totals obtained in Groups I. and II.: total number of inoculated cases, 270. On reference to Chart 1 it will be seen that the average percentage of negatives is 12.9 per cent. of the total. The remaining 87.1 per cent. sera which gave positive agglutination for *B. typhosus* may be divided up as follows:—40.7 per cent. gave up to 25 agglutinin units per 1 c.c.; 21.8 per cent. gave up to 50 units; 9.7 per cent. gave up to 75 units; 3.0 per cent. gave up to 100 units; and 1.4 per cent. gave up to 125 units. After this, comparatively few sera gave higher agglutinin units.

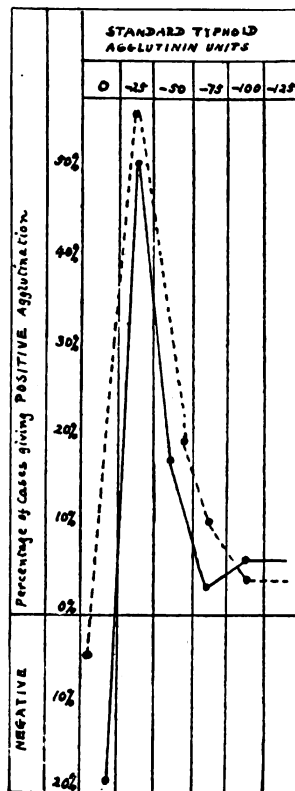
From this it will be seen that the greater number of sera giving positive agglutination gave only up to 25 agglutinin units; after this the percentage of those giving more units drops rapidly until it is found that sera containing more than 125 agglutinin units form but a small percentage of cases.

CHART 1.



Having determined the average agglutinin content of the sera of 270 inoculated persons, we can analyse the average agglutinin content of the sera of persons inoculated once and those inoculated twice.

CHART 2.



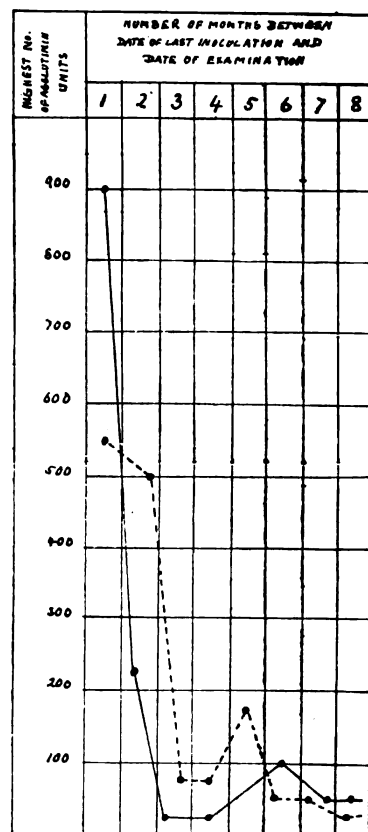
The continuous line indicates those inoculated once; the interrupted line those inoculated twice.

Influence of number of inoculations and lapse of time on agglutinin content of sera.—The influence of lapse of time can be ascertained by comparing the sera showing the highest titre, stated in terms of agglutinin units, obtained in the various months which have elapsed since the administration of antityphoid inoculation.

In the first place it is necessary to determine what are the highest titres obtained in the sera of inoculated individuals taken as a whole. This may be studied from the total figures of Groups I. and II. Total number of inoculated cases, 270. On reference to Chart 3 it will be seen that at 1 to 2 months the highest number of agglutinin units obtained was 1000. From this maximum they drop suddenly at the third month to 575, and then with another sudden drop at the fourth month to between 300 and 100, where they remain up to the fourteenth month. After this they are generally found below 100 till they disappear from the serum altogether. As to when agglutinin units do disappear it would be difficult to say from the cases in this investigation, but in certain cases up to 50 agglutinin units were found after 3 years, 25 after 4 and 5 years, though none were present in one case after 8 years since antityphoid inoculation had been received.

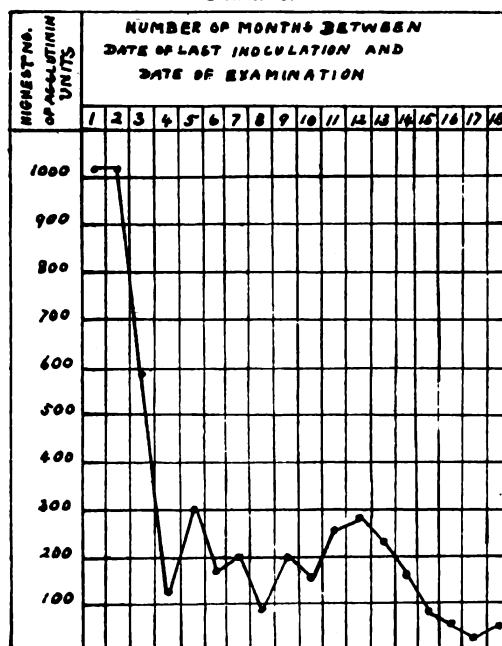
Note.—One case in Chart 3 has been omitted. This man was stated to have been inoculated 11 months prior to the time the serum was examined. His serum contained a very unusual number of agglutinin units—viz., 714. It is probable that some error arose in noting the date of inoculation.

How is the maximum number of agglutinin units per month, since inoculation was received, affected by the number of inoculations the person has received? An analysis of the sera examined under Group I. has been made and set down on Chart 4. Group I., inoculated cases, 143. Sera of those who have been inoculated once, 43; inoculated twice, 70. This chart seems to bear the following interpretation. In the second, third, fourth, and fifth months after inoculation the serum of those inoculated twice is richer in agglutinins than the serum of those who have been only once inoculated. This would probably be also the case during the first month, but unfortunately the number of sera received from men so recently inoculated was very small.



Continuous line, those inoculated once; interrupted line, those inoculated twice.

CHART 3.



recently inoculated was very small. After the fifth month there is but little difference noticeable between the cases which had received one or two inoculations.

With regard to the cases which have been inoculated three or more times, the figures are too small for comparison. They comprised the following: Inoculated three times, 20; inoculated four, five, or six times, 10. (See Table I.)

Conclusions as to effect of time and number of inoculations received on agglutinin unit content of sera of inoculated cases.—During the first month after inoculation the maximum number of agglutinin units are obtainable. The highest number of units falls rapidly after the second and during the third month. Between the fifth to the fourteenth month fairly high agglutinin unit content may be met with—viz., between 100 and 300. After 15 months the agglutinin units do not rise above 100. The sera of men inoculated twice give fewer negatives and more positive reactions; more cases give 25, 50, and 100 agglutinin units. Higher titres are obtained during the second, third, fourth, and fifth months after inoculation.

Generally speaking, the sera of these twice inoculated are stronger during the second, third, fourth, and fifth months, and the results are more lasting in those twice

than those only once inoculated. Therefore, so far as the presence of agglutinins can be regarded as an index of a person's resistance against typhoid fever, a man twice inoculated shows strong immunisation up to the fifth month

TABLE I.—Group I.: Cases Inoculated Three, Four, Five, and Six Times.

| Months between date of inoculation and date of examination. | Number of sera examined. | Agglutinin units. | | | | Months between date of inoculation and date of examination. | Number of sera examined. | Agglutinin units. | | | | |
|---|--------------------------|-------------------|-----|-----|-----|---|--------------------------|-------------------|------|------|-----|------|
| | | -0 | -25 | -50 | -75 | | | -0 | -25 | -50 | -75 | -100 |
| Inoculated 3 times. | | | | | | | | | | | | |
| 2 | 1 | ... | ... | 1 | ... | 3 | 1 | 1 | ... | ... | ... | ... |
| 4 | 2 | ... | 1 | 1 | ... | 5 | 1 | ... | 1 | ... | ... | ... |
| 5 | 1 | ... | 1 | ... | ... | 7 | 2 | ... | 2 | ... | ... | ... |
| 6 | 1 | ... | 1 | ... | ... | 8 | 1 | 1 | ... | ... | ... | ... |
| 7 | 1 | ... | ... | ... | 1 | Inoculated 5 times. | | | | | | |
| 9 | 3 | ... | 3 | ... | ... | 1 | 1 | ... | ... | ... | ... | 1 |
| 10 | 2 | 1 | 1 | ... | ... | 8 | 2 | ... | 2 | ... | ... | ... |
| 11 | 3 | 1 | 1 | 1 | ... | 13 | 1 | ... | 1 | ... | ... | ... |
| 13 | 1 | ... | 1 | ... | ... | Inoculated 6 times. | | | | | | |
| 20 | 1 | ... | 1 | ... | ... | 18 | 1 | ... | ... | 1 | ... | ... |
| 24 | 2 | ... | ... | 1 | 1 | Totals... | 10 | 2 | 6 | 1 | ... | 1 |
| 3 years. | 1 | 1 | ... | ... | ... | Grand total for cases inoculated 3, 4, 5, and 6 times. | | | | | | |
| 5 years. | 1 | 1 | ... | ... | ... | 30 | 6 | 16 | 5 | 2 | 1 | 1 |
| Totals... | 20 | 4 | 10 | 4 | 2 | Per cent. | ... | 20.0 | 53.3 | 16.6 | 6.7 | 3.4 |

after the last inoculation, and is in a better position to withstand infection up to 14 months than a person only once inoculated.

C. Influence of Syphilitic Lesions upon the Typhoid-agglutinating Power of the Sera of Antityphoid-inoculated Men.

In view of Tidy's contention³ that pyrexia or pyrexial conditions lead to the removal from the serum of agglutinins due to inoculation, the following arrangements of the results obtained with the sera of antityphoid-inoculated men in relation to the clinical condition, and the presence or absence of a positive Wassermann test, may prove of interest. Professor McWeeney has kindly provided me with the clinical data and the results of the Wassermann test carried out by him. To make a fair analysis it is proposed to eliminate 42 sera from the total 270 (Groups I. and II.), so as to deal only with 228 which gave either a distinct + 3 or + 4 Wassermann, or a distinct negative, and to include only those cases about which full information as to the stage of the syphilitic lesion (primary or secondary) was available.

Total number of sera of antityphoid-inoculated men who either had or were suspected of having syphilis, 228. These may be divided into two sections (Table II.):—Those which gave a positive Wassermann, 105 (Section I.), and those which gave a negative reaction, 123 (Section II.).

TABLE II.

Section I.: Positive Wassermann. Section II.: Negative Wassermann.

| Lesions. | No. of cases. | Positive for <i>B. typhosus</i> . | Negative for <i>B. typhosus</i> . | Lesions. | No. of cases. | Positive for <i>B. typhosus</i> . | Negative for <i>B. typhosus</i> . |
|---------------|---------------|-----------------------------------|-----------------------------------|---------------------|---------------|-----------------------------------|-----------------------------------|
| | | | | | | | |
| Primary ... | 59 | 57 (84.7%) | 2 (3.3%) | Suspected primary | 100 | 90 (90.0%) | 10 (10.0%) |
| Secondary ... | 46 | 44 (95.6%) | 2 (4.4%) | Suspected secondary | 23 | 19 (82.6%) | 4 (17.4%) |
| Totals ... | 105 | 94 (89.4%) | 11 (10.6%) | Totals ... | 123 | 109 (88.6%) | 14 (11.4%) |

General results.—From the foregoing it will be seen that the presence of a positive Wassermann does not influence the agglutinating power of the serum of inoculated individuals; 89.4 per cent. of those giving a positive Wassermann reaction, and 88.6 per cent. of those giving a negative Wassermann reaction, agglutinating *B. typhosus*. Further, although the number of sera is small for statistical purposes,

it will be noticed that the sera of patients with secondary syphilitic lesions (which are occasionally accompanied by some rise in temperature) appear to agglutinate typhoid in a higher proportion (95.6 per cent.) than the sera of those cases suffering from primary lesions (84.7 per cent.).

D. Sera Examined More than Once for Standard Typhoid Agglutinin Units (Groups I. and II.).

To judge properly the observations made on the sera examined more than once it is necessary to refer to the paper by Dreyer, Ainley Walker, and Gibson⁴ in order to form an idea as to what variations in titre may be expected in the sera of typhoid fever patients. According to these writers, the main curve in the course of agglutination in a case of typhoid fever is indistinguishable in form from the curve obtained by experimental inoculation with antityphoid vaccine, though its maximum is lower and its decline more rapid than is the case in the inoculated subject. In a chart they plot a curve of the agglutination titre for *B. typhosus* from the time agglutinins appear in the serum in an actual case of typhoid fever. The curve is represented as the highest dilutions of serum with which agglutination was obtainable. For the sake of comparison we may provisionally take these dilutions as giving standard agglutination and take the factor 5.0 as representing the factor for the standard culture. In this manner, analysing the chart we get:—

During the first 14 days the agglutinins rapidly rise from 0 to 1 in 1250 = units 250.

During the following—

8 days the agglutinins rapidly fall to 1 in 550 = units 110.

24 days the agglutinins gradually fall to 1 in 150 = units 20.

20 days the agglutinins very gradually fall to 1 in 75 = units 15.

Therefore, in the first two weeks the agglutinins rise quickly to a maximum of 250 units, in the subsequent week they drop by 140 units, and during the three weeks following this they drop by 90 units. Thus, in a period of six weeks the agglutinin units undergo violent fluctuation.

The results obtained with the sera of inoculated individuals (not suffering from active typhoid fever) in the present investigation are set down in Tables III., IV., V., and VI. Number of sera of inoculated cases examined more than once, 75. They may be divided up as follows: Sera which gave (1) steady negatives, 9; (2) steady positive titres, 11 (Table III.); (3) a rising titre, 16 (Table IV.); (4) a falling titre, 26 (Table V.); and (5) a certain amount of fluctuation, 13 (Table VI.). To describe these in detail:—

1. Sera which gave a steady negative, 9; each of these was examined twice and one three times, a negative being obtained each time.

2. Sera which gave a steady positive titre, 11 (Table III.). These gave exactly the same reading to the decimal place (with the exception of one) at the second examination. Two of these sera were examined a third time with exactly similar results. The intervals between the examinations were from one to five weeks.

3. Sera which gave a rising titre, 16 (Table IV.). One of these was examined a third time and still showed a slight rise in titre. The figures obtained over a period of 11 weeks were 5.3, 13.4, and 25.0 agglutinin units. In this case the period which had elapsed between the date of inoculation and the date of the first examination was nine months.

In all these cases the difference between the two readings was well below 50 agglutinin units, except one which showed a difference of 71 units. This case had been inoculated three months previously, when agglutinins are rapidly on the wane, and though it is not justifiable to base a theory on a few cases, it would appear that when the agglutinins, the result of inoculation, are falling, after reaching their maximum, instead of coming down in a straight line, they fall in a somewhat irregular fashion, that is with small secondary up and down waves, these irregularities being more marked in the earlier months after inoculation than in the later months, when the secondary waves become, as it were, flattened out. There is some evidence of such occurrence in the subsequent Table VII. where the sera show slight variations at repeated examinations. The suggestion, therefore, that the main curve after inoculation is a rise and then a fall, but that this line has secondary curves on the down grade, where occasionally the serum either remains steady at its titre or perhaps rises and then falls. The titre of the serum, though falling, recovers itself, as it were, at intervals on its downward route.

TABLE VI.

| Months between date of inoculation and date of first examination. | First reading. | Serum examined after— | | | | | | | | | | | |
|--|----------------|--|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|
| | | 1st week. | 2nd week. | 3rd week. | 4th week. | 6th week. | 8th week. | 9th week. | 11th week. | 14th week. | 15th week. | 16th week. | 18th week. |
| 5 | 44.6 | Steady titre followed by a falling titre. | | | | | | | | | | | |
| 10 | 44.6 | 44.6 | ... | 22.3 | ... | ... | ... | ... | ... | 28.6 | ... | ... | ... |
| | | 44.6 | ... | 32.1 | ... | ... | ... | ... | ... | 28.6 | ... | ... | ... |
| 12 | 8.0 | Rising titre followed by a steady titre. | | | | | | | | | | | |
| 16 | 10.6 | 17.8 | 22.3 | 22.3 | ... | ... | ... | ... | ... | ... | 25.0 | 25.0 | ... |
| | | ... | 13.4 | ... | ... | ... | ... | ... | ... | ... | 25.0 | 25.0 | ... |
| | | Rising titre followed by a falling titre. | | | | | | | | | | | |
| 6 | 8.9 | 17.8 | ... | 13.4 | ... | ... | ... | ... | ... | ... | 5.3 | ... | ... |
| 13 | 14.2 | ... | 22.3 | ... | 8.9 | ... | ... | ... | ... | ... | 5.3 | ... | ... |
| | | Falling titre followed by a rising titre. | | | | | | | | | | | |
| 2 | 178.5 | ... | ... | ... | ... | ... | ... | ... | ... | 53.7 | ... | 50.0 | 100.0 |
| 2 | 215.0 | ... | 53.5 | ... | 107.0 | ... | ... | ... | ... | ... | ... | ... | ... |
| 7 | 28.6 | ... | 10.7 | ... | ... | 31.2 | ... | ... | ... | ... | ... | ... | ... |
| 8 | 22.3 | 8.9 | ... | 13.4 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 10 | 142.8 | 17.8 | ... | 26.8 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 2 years. | 53.7 | ... | ... | ... | 28.6 | ... | ... | 100.0 | ... | ... | ... | ... | ... |
| | | Steady titre followed by a rise and then a fall. | | | | | | | | | | | |
| 11 | 44.6 | 44.6 | 71.4 | 35.7 | ... | ... | 13.4 | ... | ... | ... | ... | ... | ... |

E. Cases definitely known to have been Uninoculated: Sera of Group III.

Number of cases, 32. Of these, 3 were positive for *B. typhosus* and 29 were negative. Of the 3 positive cases, 2 contained 13.4 agglutinin units (Ref. Nos. 33/24.3.16, 11/31.3.16); 1 contained 125 agglutinin units (Ref. No. 13/23.6.16).

With regard to the non-inoculated case, which gave 125 agglutinin units, the specimen was received on two occasions with an interval of a week and gave exactly the same reading. It did not affect 7160. Inquiries were instituted and it was positively stated that this case had not been injected and never had typhoid fever. The faeces were obtained and plated out, but no non-lactose fermenters were found. This case is remarkable in giving such a high agglutinin content and is similar to the case described by Dreyer, Ainley Walker, and Gibson.⁴ The serum in their case agglutinated typhoid up to 1 in 1250 dilution though the man had not been inoculated, denied that he ever had typhoid fever, and the writers failed to find typhoid bacilli in the faeces or urine.

With regard to the other two cases, 33/24.3.16 and 11/31.3.16, which gave 13.4 agglutinin units, no answer has yet been received to inquiries.

II. AGGLUTINATION RESULTS WITH *B. ENTERITIDIS* OF GAERTNER (DELEPINE, 7160).

A. Sera of Antityphoid-inoculated Men (Groups I. and II.).

Number of sera, 270, of which 53, or 19.6 per cent., were positive, and 217, or 80.4 per cent., negative. Of these 53 positive sera, 30 agglutinated 7160 up to 1 in 25 dilution, 15 up to 1 in 50, 5 up to 1 in 125, and 3 up to 1 in 250. No agglutination was observed in any dilution higher than 1 in 250.

*B. Influence of Antityphoid Inoculation on Agglutinating Power of Sera for *B. 7160*, Delépine (Groups I. and II.).*

As none of the 53 sera which agglutinated 7160 (Groups I. and II.) suffered from active symptoms of enteric fever or from food poisoning, so far as could be ascertained, the question arises as to whether the presence of Gaertner agglutinins in these sera is to be ascribed to the antityphoid inoculation. If such influence were exerted it is highly probable that the length of time that had elapsed since inoculation would have some effect on the agglutinating power of 7160. With the object of revealing such influence (if it existed) Table VII. was drawn up. It shows the titre of the sera for 7160 and the number of months which had elapsed since antityphoid inoculation had been performed. It will be seen from this Table VII. that the length of time which had elapsed since a patient has been inoculated against *B. typhosus* exerts no influence over the clumping power of his serum for 7160, marked agglutination being

obtained with various sera whether the men had received inoculation one month or 25 months previously.

TABLE VII.

| Number of months between date of inoculation and date of examination. | Number of sera agglutinating 7160. | Titre of sera against 7160. | | | | Number of months between date of inoculation and date of examination. | Number of sera agglutinating 7160. | Titre of sera against 7160. | | | |
|---|------------------------------------|-----------------------------|----------|-----------|-----------|---|------------------------------------|-----------------------------|----------|-----------|-----------|
| | | 1 in 25. | 1 in 50. | 1 in 125. | 1 in 250. | | | 1 in 25. | 1 in 50. | 1 in 125. | 1 in 250. |
| 1 | 5 | 2 | 2 | 1 | ... | 12 | 11 | 6 | 3 | 1 | 1 |
| 2 | 5 | 1 | 2 | ... | ... | 13 | 3 | 2 | ... | 1 | ... |
| 3 | 4 | 1 | 2 | ... | 1 | 14 | 1 | ... | ... | ... | 1 |
| 4 | 5 | ... | ... | 1 | ... | 15 | 1 | 1 | ... | ... | ... |
| 5 | 2 | ... | ... | ... | ... | 16 | 1 | ... | ... | 1 | ... |
| 6 | 4 | 3 | 1 | ... | ... | 17 | ... | ... | ... | ... | ... |
| 7 | 4 | 2 | 2 | ... | ... | 18 | 1 | 1 | ... | ... | ... |
| 8 | ... | ... | ... | ... | ... | 19 | 1 | 1 | ... | ... | ... |
| 9 | ... | 1 | 1 | ... | ... | 25 | 1 | 1 | ... | ... | ... |
| 10 | ... | 1 | 1 | ... | ... | | | | | | |
| 11 | 1 | ... | 1 | ... | ... | | | | | | |
| Totals... | | 53 | 30 | 15 | 5 | 3 | | | | | |

C. Influence of Syphilis on Agglutinating Power of Sera for 7160.

An analysis of the 7160 agglutination results has been made out in order to see whether active syphilis influences the behaviour of the sera in any way. Sera of Groups I. and II.: 270 sera of inoculated individuals. As before, 42 cases must be eliminated, only those cases which gave a +3 or +4 Wassermann, and about which full clinical details were available; this leaves 228 cases to be examined. (Table VIII.) These cases may again be divided into two sections: those which gave a positive Wassermann, 105 (Section I.); and those which gave a negative reaction, 123 (Section II.).

TABLE VIII.

Section I.: Positive Wassermann. Section II.: Negative Wassermann.

| Lesions. | No. of cases. | Positive for 7160. | Negative for 7160. | Lesions. | No. of cases. | Positive for 7160. | Negative for 7160. |
|------------|---------------|--------------------|--------------------|---------------------|---------------|--------------------|--------------------|
| Primary... | 59 | 17 (28.8%) | 42 (71.2%) | Suspected primary | 100 | 16 (16.0%) | 84 (84.0%) |
| Secondary | 46 | 12 (26.0%) | 34 (74.0%) | Suspected secondary | 23 | 3 (13.0%) | 20 (87.0%) |
| Totals... | 105 | 29 (27.6%) | 76 (72.4%) | Totals... | 123 | 19 (15.4%) | 104 (84.6%) |

From Table VIII. it would appear that syphilis, as evidenced by the presence of a positive Wassermann, does exert some influence in increasing the agglutinating property of the serum of the subject for 7160. Those having a positive Wassermann gave 27.6 per cent. positives for 7160, whereas those having a negative Wassermann gave 15.4 per cent. positives for 7160, a difference of 12.2 per cent. Whether this difference is only apparent or real, it forms a contrast with the results obtained when the typhoid-agglutinating power of these sera is subjected to a similar analysis, those sera having a positive Wassermann showing practically no difference to those having a negative Wassermann in their agglutinating power to *B. typhosus*. It must be taken into consideration that a far larger number of sera of inoculated individuals (87.1 per cent.) agglutinate *B. typhosus* than agglutinate 7160 (19.6 per cent.), and therefore probably the results are not strictly comparable.

D. Sera of Inoculated Cases (Groups I. and II.) examined more than once against Gaertner, 7160.

Number of sera, 75. These may be divided up as follows: Sera which gave (1) steady negative, 62; (2) steady positive, 3; (3) a rising titre, 3; and (4) a falling titre, 7. To describe these in detail:—

1. Sera which gave steady negatives, 62. Of these 43 were examined twice; 11 on three occasions; 6 four times; and 2 five times. Two of the sera examined twice (Ref. Nos. 7/31.3.16 and 17/2.6.16) had a history of previous typhoid fever, the first 15 years ago and the second 16 years ago.

2. Sera which gave steady positives, 3. These were each examined on two occasions and gave the same reading each time—viz., positive in 1 in 25 after one week's interval, in 1 in 50 after three weeks' interval, and in 1 in 125 after one

week's interval. One of them, Ref. No. 9/21.1.16, which agglutinated 7160 in 1 in 125 dilution, had a history of typhoid 18 years ago. His serum did not affect *B. paratyphosus* A or B. He had never suffered from food poisoning. He had received antityphoid inoculation nine months before the first specimen was examined, and gave a slightly falling titre for *B. typhosus*, 26.5 and 14.2 agglutinin units per 1 c.c. of serum.

3. Sera giving a rising titre. Of these Ref. No. 12/10.3.16 was examined three times during the course of four weeks. The first two specimens failed to agglutinate 7160, but the third time it agglutinated 7160 in 1 in 25 dilution. He had received antityphoid inoculation two months previously and showed a slightly falling titre for *B. typhosus*. The second serum, Ref. No. 27/9.6.16 rose from a positive in 1 in 25 dilution at the first examination to a positive in 1 in 50 at the second after an interval of a week. This serum had no effect on *B. paratyphosus* A or B, and gave a slightly rising titre to *B. typhosus*. This man had been inoculated 12 months prior to the first examination. The third, Ref. No. 32/4.2.16, rose from a positive in 1 in 125 dilution to 1 in 250 after an interval of three weeks. There was a falling titre for *B. typhosus*. He had been inoculated nine months prior to the first examination. The full clinical details of this case have not yet come to hand.

4. Sera which gave a falling titre. Of these 4 fell from a positive in 1 in 25 dilution to 0 during a period of from two to three weeks. One of them was examined four times subsequently with a negative result. These cases had received antityphoid inoculation 2, 3, 4, and 7 months prior to the first examination. Three sera fell from a positive of 1 in 50 to 0. One of them was examined on two subsequent occasions during a course of three weeks and proved negative for 7160.

E. Results of Cases Definitely Known to have been Uninoculated (Group III). Agglutinin Results with 7160.

Number of cases. 32. Of these, 6 agglutinated and 26 did not agglutinate 7160. Of the 6 positive cases, 4 agglutinated up to 1 in 25 dilution, 1 up to 1 in 50, and 1 up to 1 in 250.

The case which agglutinated 7160 in 1 in 250 dilution (Ref. No. 21/4.2.16) was received three times for examination with a one-week interval. It gave a positive reaction on three occasions as follows: 1 in 250, 1 in 125, and 1 in 250. The serum in this case did not agglutinate *B. typhosus*, *B. paratyphosus* A or B. He had never had typhoid fever and did not suffer from symptoms of food poisoning.

The case which agglutinated 7160 in 1 in 50 dilution (Ref. No. 25/9.6.16) was received twice subsequently at one-week and four-week intervals, but on the second and third occasions the serum failed to affect 7160 and was negative for *B. typhosus* and *B. paratyphosus* A and B. No non-lactose fermenters were discovered in the faeces. This case had typhoid in 1906—that is, ten years prior to the date of the examination of the serum.

F. Results with Sera of Cases about Whom Information as to Inoculation was Not obtainable (Group IV.).

Although it is primarily intended to deal with the 7160 agglutinations of this Group IV., it would be well to consider what was their probable relation to inoculation.

Agglutination results with *B. typhosus*.—Number of cases 64; 30 gave a positive and 34 gave a negative result. Of the 30 positive cases 16 contained up to 25 agglutinin units per c.c., 7 up to 50 units, 4 up to 75 units, 1 up to 100 units, 1 up to 125 units, and 1 up to 300 units. The percentage of negative cases is much higher than is found among inoculated cases, so it is probable that a large number of them had not received any inoculation.

Agglutination results with 7160.—Number of cases 64; of these 13 were positive and 51 negative for 7160. Of the 13 positive cases 4 agglutinated up to 1 in 25, 6 up to 1 in 50, 2 up to 1 in 125, and 1 up to 1 in 250.

Note.—Nine of these cases were examined more than once with the following result:—(a) Negative 7, examined twice, 6, examined three times; (b) Positive at first examination, subsequently negative 1 in 25, 1; (c) Negative at first reading, and subsequently positive 1 in 50, 1.

Total Agglutination Results with Gaertner (Delépine, 7160).

As antityphoid inoculation bears no relation to the agglutinating power of a serum for Gaertner (Delépine, 7160), the results of the sera of each group of the present series of cases can be taken collectively as follows:—

| | No. of cases. | Agglutinated 7160. |
|--|---------------|--------------------|
| Groups I. and II., inoculated cases | 270 | 53 |
| Group III., cases known to have been not inoculated | 32 | 6 |
| Group IV., cases about whom information as to inoculation was not obtainable | 64 | 13 |
| | 366 | 72 (19.6%) |

The actual titre with which agglutination was obtained is given in Table IX.:

TABLE IX.

| | Number of sera. | Positive sera. | Dilution of serum. | | | |
|-------------------|-----------------|----------------|--------------------|----------|-----------|-----------|
| | | | 1 in 25. | 1 in 50. | 1 in 125. | 1 in 250. |
| Groups I. and II. | 270 | 53 | 30 | 15 | 5 | 3 |
| Group III. | 32 | 6 | 4 | 1 | 0 | 1 |
| Group IV. | 64 | 13 | 4 | 6 | 2 | 1 |
| Totals | 366 | 72 | 38 | 22 | 7 | 5 |
| Per cent. | | 19.6 | 10.4 | 6.0 | 1.9 | 1.3 |

Therefore, any deductions one might seek to base upon the behaviour of the sera of persons who form the 366 units of the Groups I., II., III., and IV. are liable to an error of 19.6 per cent. if so strong a serum as 1 in 25 be taken. As the dilution is increased the error grows less—namely, 9.2 per cent. when a 1 in 50 dilution is taken, 3.2 per cent. with 1 in 125, and 1.3 per cent. with 1 in 250. Above a 1 in 250 dilution the error disappears altogether. These results are interesting in view of the work recently published by Ritchie,⁶ where an analysis of the "normal" mean agglutination of sera for bacilli of the typhoid-dysentery group is made and where deductions have been drawn as to how far dilution of serum is necessary before positive agglutination can be regarded as evidence of a particular disease. He points out that such a high dilution as 1 in 128 cannot be relied upon for diagnostic purposes in the case of *B. dysenteriae* (Flexner) infection, whereas in the case of *B. dysenteriae* (Shiga), *B. typhosus*, *B. paratyphosus* A and B agglutination with a much lower dilution of serum can be taken as diagnostic.

III. GENERAL RESULTS WITH CASES WHICH HAD A PREVIOUS HISTORY OF TYPHOID FEVER (IN GROUPS I., II., AND III.).

Total number 13. Of these 9 had been inoculated with typhoid vaccine and 4 had not been inoculated (see Table X.). Three sera agglutinated 7160. These were also tested against paratyphoid A and B, with a negative result.

TABLE X.

| | Number. | Previous history of typhoid fever. | Antityphoid inoculation. | | Effect on <i>B. typhosus</i> . | Effect on 7160. | Effect on paratyphosus A and B. | Reference number. |
|-----------------|---------|------------------------------------|--------------------------|---------------|--------------------------------|-----------------|---------------------------------|-------------------|
| | | | No. of | Date of last. | Units. | Dilution. | | |
| Inoculated. | 1 | 4 mths. | 2 | 9 mths. | None | None | ... | 10/28.1.16 |
| | 2 | 6 years. | 2 | 18 " | 5.3 | ... | ... | 14/7.4.16 |
| | 3 | 8 " | 2 | 15 " | 20.0 | 1 in 25 | None | 3/7.6.6.16 |
| | 4 | 9 " | 2 | 13 " | 5.3 | None | ... | 8/26.5.16 |
| | 5 | 15 " | 2 | 5 " | 13.4 | ... | ... | 7/31.3.16 |
| | 6 | 16 " | 1 | 3 years. | None | ... | ... | 17/2.6.16 |
| | 7 | 18 " | 2 | 4 mths. | 13.4 | ... | ... | 10/12.5.16 |
| | 8 | 18 " | 2 | 9 " | 26.5 | 1 in 125 | None | 9/21.1.16 |
| | 9 | 22 " | 2 | 4 " | 13.4 | None | ... | 24/21.3.16 |
| Not inoculated. | 1 | 10 years | None. | None. | None | None | ... | 4/2.6.16 |
| | 2 | 10 " | " | " | " | 1 in 50 | None | 5/19.5.16 |
| | 3 | 10 " | " | " | " | None | ... | 25/9.6.16 |
| | 4 | 15 " | " | " | " | None | ... | 10/23.6.16 |

Among the inoculated cases, in No. 1 (Ref. No. 10/28.1.16) the serum was submitted twice for examination. On the first occasion it failed to agglutinate *B. typhosus*, but on the second it did so (8.9 agglutinin units per 1 c.c.). On neither occasion did it affect 7160. It was subsequently

ascertained that the man had had dysentery five months and typhoid fever four months previously. Unfortunately, the patient left Dublin before a sample of his serum could be obtained to test for paratyphoid agglutinins, but the case is being followed up and inquiries have been instituted as to the serological findings obtained during his illness.

Case 8 (Ref. No. 9/21.1.16). The serum was examined twice; on the first occasion it gave 26.5 agglutinin units for *B. typhosus* and agglutinated 7160 in 125 dilution. On the second occasion, one week later, it gave 14.2 typhoid agglutinins and agglutinated 7160 in 125 dilution. On inquiry it was stated that he had never at any time suffered from symptoms of food poisoning.

Among the non-inoculated cases No. 3 (Ref. No. 25/9.6.16) was examined on two subsequent occasions, once after a week, and a second time five weeks after the first examination; on both these occasions it failed to agglutinate 7160. An examination of the faeces proved negative for non-lactose fermenting bacilli.

IV. SUMMARY.

1. Out of the 270 sera of inoculated men examined 87.1 per cent. gave positive agglutination for *B. typhosus*. Of these, the greater number gave up to 25 standard agglutinin units per 1 c.c. of serum; after this the percentage of units obtained dropped rapidly until the number of sera containing more than 125 agglutinin units formed but quite a small percentage of cases.

2. During the first month after inoculation the maximum number of agglutinin units is obtainable. This maximum falls rapidly during the third month after inoculation. Between the fifth and fourteenth month a fairly high agglutinin unit content may be met with, but after 15 months subsequent to inoculation the agglutinin units were not found above 100.

3. There is some evidence to show that after the highest point in the agglutination, following antityphoid inoculation, has been reached the subsequent fall is progressive, but is inclined to remain steady or even to rise slightly at intervals so as to form secondary waves on the downward course. This is more marked in the earlier months following inoculation than at the later months.

4. The sera of men inoculated twice give more positive reactions than men inoculated only once. Also a greater number of them give 25, 50, and 100 agglutinin units. Higher titres are obtained with the sera of men inoculated twice during the second, third, and fifth months after inoculation than among those who have been inoculated once.

5. The presence of syphilis (as indicated by a positive Wassermann) does not affect the agglutinating power of a serum for *B. typhosus*, though apparently it does appear to increase slightly its power to agglutinate 7160.

6. The agglutinating power of a serum for 7160 is not influenced by antityphoid inoculation.

7. Out of 366 sera, consisting of both inoculated and non-inoculated men who had either had or were suspected of having syphilis, 19.6 per cent. agglutinate *B. enteritidis* Gaertner (Delépine, 7160) when a 1 in 25 dilution is used. A much smaller percentage may agglutinate this bacillus up to a 1 in 250 dilution. None of these sera were found to affect 7160 in a higher dilution.

8. Out of 13 cases with a previous history of typhoid fever only 3 agglutinated 7160. These cases had had typhoid fever 8, 10, and 18 years respectively, previous to the date of examination. The 10 cases not agglutinating 7160 had histories of typhoid fever four months to 22 years previously.

9. Any of the sera clumping 7160 which were examined for co-agglutinins for paratyphosus A or B proved negative.

Bibliography.—1. Dawson, George D.: A Preliminary Account of a Research on the Diagnosis of Typhoid Fever in Inoculated Subjects. *Brit. Med. Jour.*, June 24th, 1915. 2. Dreyer, Georges: Widal's Reaction with Sterilised Cultures. *Journal of Pathology and Bacteriology*, xiii., 1904. Also see *THE LANCET*, 1915, ii., 837; and Ainley Walker, B. W.: A Note on Widal's Reaction with Standardised Agglutinable Cultures. *THE LANCET*, 1916, i., 17. 3. Tidy, H. L.: Discussion on Paratyphoid Fever. *Royal Society of Medicine, THE LANCET*, 1915, ii., 1191. Also Tidy, H. L.: Influence of F-bile Conditions on Inoculation Agglutinins. *THE LANCET*, 1916, i., 241. 4. Dreyer, Georges, Ainley Walker, B. W., and Gibson, Alex. G.: Typhoid and Paratyphoid Infection in Relation to Antityphoid Inoculation. *THE LANCET*, 1915, i., 324. 5. Dakynne, D. J.: Observations on Some of the Agglutination Reactions of the Blood of Soldiers Inoculated against Typhoid Fever. *THE LANCET*, 1915, ii., 540. 6. Ritchie, T. E.: On the Agglutination Reaction of the Bacilli of the Typhoid-Dysentery Group with Normal Sera. *THE LANCET*, 1916, i., 1257.

CHRONIC GONORRHOEA CURED BY ELECTROLYSIS.

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CHRONIC gonorrhoea is an unfortunate state for any patient, and it also represents a clinical condition which often taxes the patience of the doctor in charge of the case as much as that of the sufferer. The condition is one which is the more exasperating, because after all there may be so little to get rid of, and yet it is (if the gonococcus be still present) material of such significant and potential virulence.

I think it is insufficiently realised that if treatment by injections, or bougies, or irrigation, or medicine, or combinations of these methods, have failed to cure a case of gonorrhoea after several months it is not only useless but actually harmful to continue them. How often does one find that irrigations continued for many months and having failed to cure have become changed from irrigations into irritations. Within the last year numerous patients have come under my care in whom these things had happened, and I think it well to indicate the lines on which I have attained success. Although the great majority have been cured, and I should prefer to know of any failures, I can only find record of one or two in which the result remains unknown because of the expiration of sick-leave and an unavoidable return to active service. The following are cases illustrating an advantageous change of treatment.

CASE 1.—The patient was sent to me with the following history. After a recent festivity he alleged a gradual onset of a discharge which was ascribed to another return of an old attack. As usual, I examined Gram-stained films of his copious discharge and found groups of gonococci in every field. He also admitted scalding and smarting, and in a consultation with his medical attendant, who was present, the history was withdrawn and a reinfection conceded six months before. Although his medical attendant had been misled the patient mentioned that he had from the outset the help of two specialists, who had irrigated and injected silver compounds into the deep urethra and inserted soluble bougies, and it was easy to believe his opinion that after six months he was little, if any, better. This patient had got it well on his nerves, and he had moderately severe rheumatism.

Treatment.—I began electrolysis of the anterior urethra every other day until 14 treatments had been given, and then proceeded to electrolyse the deep urethra and gave ten more administrations. The patient was absent on business for nine days after a month's treatment, and the case was finished after treatment spread over seven and a half weeks. Repeated microscopy showed the absence of pus, and the cure is assured by my continued touch with the patient up to one year after beginning his case.

The accessory treatment consisted in the use of santal oil, salol, and a few doses of vaccine. The last named seemed unable to suppress the rheumatism, which only disappeared with the absence of the gonococcal discharge.

I think that not the least important part of the cure in the above case was the immediate stoppage which I enforced of any injections or irrigations, even during the patient's enforced absence. The case illustrates the recuperative power of a previously irritated mucous membrane, which was gently relieved of its gonococci as described.

CASE 2.—This patient arrived from abroad on crutches with a history of acute gonorrhoea of ten weeks' standing. He had been thoroughly irrigated and developed a very swollen and inflamed knee full of fluid. This knee had been blistered freely and the patient was naturally full of anxiety. He had been given several doses of vaccine.

Treatment.—As usual I focussed my efforts on the discharge and did nothing at all to the knee. The irrigations were stopped and small doses of vaccine and a little santal oil were administered. After eight treatments the discharge was difficult to find, and I ordered the patient to begin walking, which was now not painful. Though the limb was wasted from disuse he soon walked easily, and after six weeks could do all bending exercises except supporting the whole body on the bad knee in the bent position (quite a strong test for healthy folk). In this case, however, the final clearance of pus and gonococci was unexpectedly prolonged, but after 28 treatments the patient recovered and took an army commission.

The interest, I think, of this case is the rapid resolution of the inflammation of the knee coincident with the overcoming of the discharge.

CASE 3.—The history in this case was as follows. Gonorrhoea had been contracted 11 months before, and had treatment by irrigations and injections, besides vaccine. The patient was pale and unable to walk on account of a painful, very hard and swollen epididymis of recent occurrence.

Treatment.—After seven electrolysis treatments as far as the compressor urethrae, the urine was almost clear, but microscopically it showed a trace of pus, although the testicle was nearly normal in size. I then electrolysed into the deep urethra and gave four deep urethral treatments, making 11 administrations in all during 41 days. The patient made a complete recovery, and on account of a visit in connexion with military service I was able to confirm his cure six months later. Besides the electric treatment he took a little santal oil and had five doses of gonococcus vaccine, and, of course, irrigations and injections were stopped from the outset.

CASE 4.—This patient had contracted gonorrhoea three months before and used injections of potassium permanganate. He was unable to arrest the discharge and he found its volume rapidly increasing after stopping the injection. Microscopic examination showed very numerous gonococci, and the patient's condition was the worse for an impaired nervous system after 11 months' artillery work in France without any leave.

Treatment.—Although much persuasion was required to enforce abstinence from the use of any injections or lavage, the patient was soon reassured by the cessation of all discharge after six electrolyses, two of which were within the deep urethra. He remained free from any symptoms for several months after stopping the treatment and had resumed the use of alcohol. This intelligent patient had also arrived at the unhappy stage of incessant scrutiny of his urine in the domestic tumbler. His recovery was associated with great benefit to his nervous system and general health.

In the foregoing cases both pus and gonococci were found by microscopic examination of the discharge, and that fact decided me to use electrolysis. The worst of the chronic cases, however, show no gonococci, and there is a predominance of epithelial cells and much less pus in the discharge. Such cases will take longer to cure, and often, I think, electrolysis should be avoided; at any rate, until other means have been tried. In these cases with epithelial peeling, as shown by the microscope, one finds various bacteria to be present—viz., staphylococci, colon or diphtheroid bacilli, and the procedure which I prefer is as follows. Prohibit the continued irritation of injected chemicals and the loss of more epithelium by the operations of lavage and allow no instrumentation whatsoever of the weakened urethral mucosa. An autogenous vaccine should be made from the bacteria present and used by weekly injections in gradually increasing strength. Besides this, small doses of a urinary antiseptic should be taken after meals and abstinence from alcohol enforced. The antiseptic may be urotropin, santal oil, or salol. I believe any attempt at diuresis is to be avoided, for one naturally tries to give the urethral passages as much rest as possible when showing signs of chronic irritation. In one chronic case of this type of five years' duration the patient's moderately copious discharge was composed almost entirely of urethral cells; and this was the worst case I have ever examined.

Another difficult class of chronic case is the man with urethral stricture and a discharge. If microscopy shows pus and gonococci the latter should be removed by electrolysis. In treating these cases, however, it is advisable to go very slowly and with only a small current. One troublesome liability is a spasmodic contraction upon the inserted catheter during the flow of the current and of which the patient is usually unaware. Attempted withdrawal shows its retention in what feels quite a firm hold. I have found its release to follow a rather strong reversal of the current for a few minutes, or the injection of stovaine 2 per cent. solution into the catheter will bring about its release.

Needless to say, stricture cases must be handled with nothing approaching force, for besides the pain which would occur the major damage of laceration and simultaneous bacterial inoculation of the inflamed (and sometimes ulcerated) area behind the stricture might occur, and constitutional disturbances result. Cases of acute gonorrhoea are, no doubt, cured by the routine methods in general use, and when this occurs all is well. When, however, no cure has been obtained the treatment needs to be radically altered before the patient's urethral vitality has become damaged by persistence in methods which are no longer able to produce progress.

I am convinced that the above illustrative cases prove that many of the failures can be cured if helped in quite a different way.

A CASE OF A BULLET IN THE SPHENOIDAL SINUSES; REMOVAL THROUGH THE LEFT NOSTRIL.

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CAPTAIN, R.A.M.C. (T.); SURGEON, BEAUFORT WAR HOSPITAL, BRISTOL.

ALL who are engaged in war surgery must be impressed by the many unexpected and diverse paths taken by bullets to reach their ultimate resting places. The following case is in many respects so unique that I think it worth recording.

A soldier, aged 22, in an infantry regiment, whilst on active service in Suvla Bay was wounded over the left hip. The surgeon was commencing to dress his wound when the patient was struck a second time by a bullet, which for a short time rendered him unconscious. After regaining consciousness blood was found trickling down the side of his nose from the left inner canthus. He was invalided home and sent to the Beaufort War Hospital. On examination at the hospital no wound or scar was found either on the face or in connexion with the eye or on the scalp. There were swelling and paralysis of the eyelids and optic atrophy on the left side (Major Walker). A skiagram of the skull revealed the presence of a bullet lying transversely and obliquely below the sella turcica; its base was seen in the left sphenoidal sinus and the body passed obliquely downwards and forwards through the septum between the sinuses, its "nose" resting in the roof of the right nasal cavity. (See Skiagrams 1 and 2.) There can be no doubt that the bullet entered at the left inner canthus, that it passed along between the eyeball and the inner wall of the orbit, until it reached the apex of that cavity. Here turning downwards, inwards, and forwards, it described an angle of more than 180°, entered the sphenoidal sinus, wounding in its course the third and optic nerves.

FIG. 1.



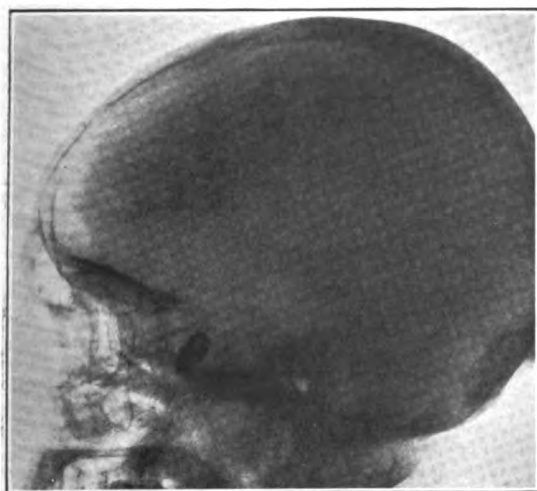
Skiagram taken antero-posteriorly.

Having discovered this foreign body the question arose, Should it be allowed to remain or would it be in the interest of the patient to remove it? Major Walker, ophthalmic surgeon to the hospital, was of opinion that the optic atrophy had so far advanced that removal, as far as any improvement in vision was concerned, would be of no benefit. On the other hand, in my opinion, to leave a foreign body of such magnitude in the sphenoidal sinuses and to expose the patient to the risk of a very probable suppurative sinusitis was not in his best interests. Eventually I explained fully to the patient the danger of allowing it to remain, emphasising at the same time that its removal could not be effected without appreciable risk, and I left it to him to decide. There was no hesitation on his part; he was willing to submit to anything if only the bullet could be got at.

As the skiagram showed that the greater part of the bullet was lying on the left of the middle line, and the left nostril being more roomy than the right, I decided to proceed from that side. At different stages the anterior half of the inferior and most of the middle turbinates were removed. On the next occasion I broke through the anterior wall of the

sphenoidal sinus with a Watson Williams trocar (a skiagram was taken showing the trocar passing over the bullet in, and its tip resting against the roof of the sinus). An attempt was then made to introduce cutting forceps with a view to enlarge the opening in the anterior wall. It was at this stage that I met with difficulty and delay. Neither then nor at any of the attempts I subsequently made was I able to introduce any instrument of this kind. Whether this was due to the position of the bullet or to faulty technique on my part, I am unable to say, but it became evident that if the foreign body was to be removed some other method

FIG. 2.



Skiagram taken transversely.

than that usually adopted must be tried. After mature deliberation I decided to make a final attempt with the patient under a general anæsthetic and upon the X ray table. This I did on June 30th last. The patient having been anæsthetised, the lights were turned out, and in all the stages of the operation one was entirely guided by the image on the X ray screen. The trocar was first passed up the left nostril into the sinus, showing that the opening previously made in the anterior wall was patent. This being withdrawn, a Watson Williams "rasp" was introduced and slipped over the bullet with its cutting surface downwards. Turning it so that this surface pointed to the middle line, and keeping the side of the instrument in contact with the upper surface of the bullet, I rasped away the bone, cutting through the septum between the sinuses, and, as far as one could judge, almost to the tip of the bullet. The next step was to remove the remaining portion of the anterior wall. I again tried to introduce cutting forceps, but failed. Taking a hammer and a narrow rounded chisel, from the cutting edge of which I had previously measured $3\frac{1}{4}$ inches, I passed the latter up to the bone, and by a series of regulated strokes I broke down all that was in front of the bullet. Having done as much of this as appeared necessary, the chisel was withdrawn and a blunt hook was passed on the flat through the opening above the foreign body, until it reached the roof of the sinus. It was then turned downwards, and the hook was felt to embrace the bullet. After gently sliding it along until it was seen to be quite near the base, gentle traction was made. At first there was no response, the base of the bullet appearing to be fixed against the outer wall, but after persevering for a short time, it yielded, and was turned down into the nasal cavity; there it was seized with forceps and pulled down to the floor of the nose and was subsequently recovered. The man made an excellent recovery; on the third day after the operation he was up assisting in the ward.

My thanks are due to Mr. Smallcombe, skiagraphist to the hospital, for the skiagrams and also for the most valuable assistance his experienced eye rendered me at the operation in localising the relative positions of the bullet, instruments, and adjacent parts.

Bristol.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

RETAINED PLACENTA IN A RUDIMENTARY HORN OF THE UTERUS.

BY M. C. S. LAWRENCE, M.B., CH.B.VICT., &c.

THE patient was a primipara, aged 24, and had a very hard labour. The presentation was a vertex one in the right occipito-posterior position. I had to rotate manually and apply forceps. After waiting 40 minutes for the placenta after the birth of the child, and as no sign of it was forthcoming I tried to express it manually by compression and failed. I then introduced my hand into the uterus and found the placenta in a rudimentary horn; the shape of the uterus abnormally was peculiar and led me to expect an abnormality. The placenta was adherent all round and could not be peeled off, but had to be removed piecemeal. Two days later the patient passed a piece of placenta about the size of a watch, but as there was no preceding hæmorrhage I concluded it had been detached before and had been lying loose in the uterus or vagina. The patient made an absolutely uneventful recovery.

Earlestown, Lancs.

A CASE OF CONGENITAL ABSENCE OF NAILS.

BY BERNARD O'NEILL, B.A. CANTAB.,
M.R.C.S., L.R.C.P. LOND.

A WOMAN, aged 26, came to me in July of this year as a patient suffering from dental caries and anæmia. She was of frail appearance and pale and weighed only 6 st. 10 lb.

FIG. 1.

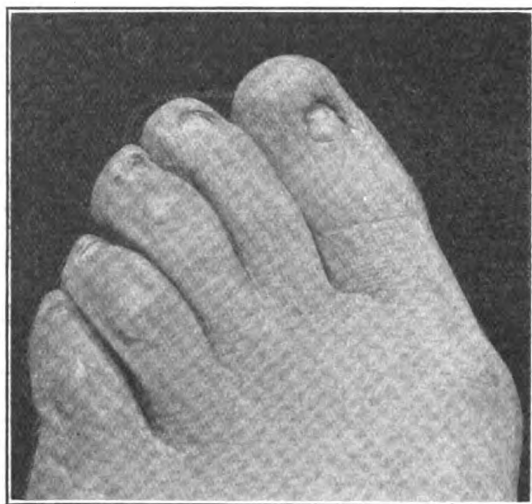


Right hand, showing absence of finger-nails.

She had no nails at all on the thumbs or fingers or great toes and only tiny fragments of nails on some of the other toes. The nail-beds were present on all the digits of the hands and feet, and the fragments of nails found on some of the toes were placed round the edges of the nail-beds or on the nail-beds themselves. The thumbs, fingers, and great toes had a hooded appearance at the extremities. In the fingers and thumbs the nail-bed had an upper paler part and a lower shining and more vascular part, the latter corresponding to

the lunette in the nail of a normal digit. The patient told me that her only other relatives with this peculiarity were two younger sisters, aged 25 and 6 years respectively.

FIG. 2.



Left foot, showing absence of toe-nails.

The following table of the family of brother and sisters is interesting, as showing in what order the abnormality occurs:—

| | Age. | |
|----------------|------|-----------------------------|
| Brother | 28 | With nails. |
| Sister | 26 | (my patient) Without nails. |
| " | 25 | " |
| " | 21 | With nails. " |
| " | 19 | " |
| " | 6 | Without nails. |

The patient told me that her mother had the operation of evulsion performed upon the nail of one of her great toes during the time when she was carrying the subject of this note.

Chiswick, W.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF MEDICINE.

Oesophagectasia.—Acquired Syphilis of the Lungs.

A MEETING of this section was held on Nov. 28th, Dr. F. PARKES WEBER being in the chair.

Dr. H. BATTY SHAW and Dr. A. W. Woo communicated a paper on six cases of Oesophagectasia, which was published in full in our issue of Dec. 2nd.

Professor S. G. SHATTOCK said that, like idiopathic dilatation of other organs such as the bladder and colon, the condition had a pathogenesis of its own, but one which was not known. It was not due to vagal paralysis, for then the dilatation would be gradual and accompanied by gradual atrophy. Chronic spasm of the cardiac sphincter was not the cause, for if it were there would be local overgrowth of the muscular wall at the cardia, which did not occur. Kinks could not explain the origin of all cases, as specimens showed, for if they had been in existence for any length of time there would be permanent deviation from the normal position, which was not the case. The view held by Dr. Weber that there was a blocking of stimuli analogous to heart-block did not apply to the case of the oesophagus, for removal of lengths of oesophagus did not prevent conduction. His own belief was that there was a want of coördination between the propulsive action of the oesophagus and the relaxation of the sphincter. The peccant spot was probably the mucosa, which was hypoaesthetic, and the defect might be confined to the area of the cardia. The sphincter failed to relax and the

oesophagus to empty just as the vesical sphincter remained shut and the bladder failed to empty if its mucosa were cocaineised. He suggested as treatment removal of the lowest inch or so of the oesophagus.

Dr. A. F. HURST agreed that the condition was probably not very rare, for he had met with seven cases. He disliked the term "oesophagectasia," since at the earliest stage of the malady the oesophagus was not dilated. Like the hypertrophy of the walls and the ulceration, the dilatation was a secondary development. He held that the normal activity of every hollow organ consisted in the passage of a peristaltic wave along it and the relaxation of the circular muscle at its distal aperture. This had been demonstrated on animals and could be seen by X rays. The relaxation occurred in the alimentary canal in three areas—at the end of the oesophagus, at the pylorus, and at the ileo-cæcal valve. In the condition under discussion, so-called "cardio-spasm," there was a failure of relaxation of the cardiac sphincter, and it was more accurately designated by the term "achalasia" which he had applied to it. There was no spasm, for if a mercury tube were passed it was not gripped. By some a spasm of the diaphragm had been suggested as a cause, but there was no record of any local hypertrophy of the diaphragm, no grip, and X rays showed that the diaphragmatic ring was not the site of the obstruction. Reflex causes might produce this upsetting of the normal mechanism, as was exemplified by inflamed conditions of the appendix, which lead to failure of relaxation of the ileo-cæcal sphincter. Some cases were probably purely nervous in origin. Water-brash, a condition in which a quantity of neutral fluid was brought up, illustrated his contention. In that affection excessive acidity of the gastric contents led to achalasia, and the saliva which poured out was swallowed and retained in the oesophagus, from which it was subsequently ejected.

Dr. WOO said that early diagnosis was of prime importance, for in early and slight cases careful dietary was quite effective. In the severest cases no doubt operation was needed. In cases of some standing unrelieved by dieting he said that stretching of the cardia by means of distensible bags, covered by silk to limit their expansibility, had proved very successful.

Mr. HERBERT TILLEY said that his experience favoured the existence of spasm in the position of the orifice in the diaphragm. When a tube was passed down the oesophagus under oesophagoscopy it could be felt to impinge against a resisting area; this then relaxed and the tube passed through. If the same procedure were repeated under a general anaesthetic the tube was passed without encountering this resistance. He urged that an oesophagoscope ought to be passed in all cases of obstruction in the oesophagus with very few exceptions, such as aneurysm. For treatment he recommended the passing of a mechanical dilator and dilatation by its means once a week for five or six weeks. By this means many cases could be cured.

Dr. C. R. BOX showed a radiogram as a commentary of what might happen when a patient was entrusted to pass his own mercurial tube. Though the patient believed that he was getting better by passing it, the radiogram showed that the tube did not enter the stomach, but lay curled up in the oesophagus.

Dr. PARKES WEBER read a paper on Acquired Syphilis of the Lungs. After describing six cases of chronic non-tuberculous disease of the lung, three of which he regarded as syphilitic and three as probably of the same nature, Dr. Weber said that while he was physician to the Mount Vernon Hospital for Diseases of the Chest he practically never saw a case which he could regard as one of pulmonary syphilis, but recently he had met with several in which he believed that diagnosis could be made with more or less probability. In one of these, that of a man, the nature of the lesion had been suggested by a patch of syphilitic leucoderma on the neck, an eruption very rare in men. Many writers on the subject had had the opportunity of making post-mortem examinations. The chief pathologico-anatomical features were: (1) gummatous formation, with a tendency to necrotic changes; and (2) more chronic, and often widely-spread, fibrotic changes, tending to become associated with bronchiectatic dilatations. In the cases now described he thought the changes were chiefly of the fibrotic order, though gummatous formation might also have occurred, especially in two of them. According

to T. Tanaka,¹ the histology of the pulmonary indurative changes of acquired syphilis was very similar to that of the so-called "white pneumonia" of congenital syphilis. The most characteristic features were much endarteritis obliterans, together with peri-arteritis and endo-phlebitis. Mesarteritis also occurred, and in three cases Tanaka found a noteworthy increase of the unstriated muscle tissue, which he regarded as derived from the walls of the small bronchi, and which had till then never been described as connected with pulmonary syphilis. In regard to clinical diagnosis the question of there being an aortic aneurysm or mediastinal new growth might arise, especially if the left recurrent laryngeal nerve were paralysed. But the clinical differentiation from tuberculosis was the chief difficulty, for in tertiary syphilitic diseases of the lungs there might be pyrexia, the so-called "tertiary syphilitic fever," such as not very rarely occurred in tertiary syphilitic disease of the liver, or a complicating fever, due to associated bronchitic and bronchiectatic changes with purulent discharge. Moreover, there might also be (though less in frequency and degree than in tuberculosis) night sweats, emaciation, hæmoptysis, and copious nummular mucopurulent sputum. (In some cases of hæmoptysis many spirochætes had, he believed, been found in the sputum, though doubtless not the *Spirochæta pallida* of syphilis.) In pulmonary syphilis, however, the lower parts of the lungs were generally chiefly involved, and the absence of tubercle bacilli in the sputum on frequently repeated examinations, together with a history of past syphilis, evidence of tertiary syphilitic lesions elsewhere, and a positive Wassermann reaction ought to turn one's attention in the right direction. In regard to pulmonary syphilis, one had to bear in mind the possible coexistence of syphilitic ulcers or stenoses in the bronchial tubes, trachea, or larynx. Stengel (1903) pointed out that one of the most suspicious symptoms was intense dyspnoea of more or less spasmodic type, with a tendency to stridor and cyanosis, all of these being indicative of obstruction in the larger air-passages. In some cases the respiratory symptoms were altogether much more severe than the ordinary physical signs in the lungs would lead one to suppose. There might also be recurrent severe spasmodic attacks of coughing, accompanied by more or less copious mucopurulent expectoration. In some cases pleurisy and pleuritic effusion might be associated with pulmonary (gummatous) syphilis, as they probably were in one of his cases. The therapeutic test was always of extreme importance, especially when the patient was found to derive obvious benefit from the use of potassium iodide, a drug which sometimes aggravated the symptoms in pulmonary tuberculosis. Old cicatricial stenoses of the respiratory passages could not, of course, be removed by antisiphilitic treatment. It must always be remembered that pulmonary tuberculosis was not at all rare in syphilitic subjects, and, *vice versa*, that tuberculous patients not very rarely acquired syphilis. He did not think that the two diseases had much effect, either good or bad, one on the course of the other, unless one or both of them had been sufficiently severe to produce a condition of cachexia and to lower the resistance of the body toward disease. Pulmonary tuberculosis, as far as he could judge, was uninfluenced by the presence of an old quiescent syphilitic taint. Though by some an antagonism between the two diseases had been supposed to exist, it was more probable that syphilis predisposed to tuberculosis, in so far as it lowered the vitality of the organism; and it was not unlikely that syphilitic tissues, as had been maintained,² constituted a specially favourable soil for the growth and multiplication within the body of tubercle bacilli. When the tuberculosis was active and the syphilis quiescent or obsolete the former naturally dominated the whole clinical aspect and the prognosis, and the effect of energetic anti-syphilitic treatment by mercury and potassium iodide was not unlikely to be a bad one. Though salvarsan and neo-salvarsan in moderate doses seemed to do no harm in ordinary cases of pulmonary tuberculosis, yet, as far as he knew, they did no good.

¹ T. Tanaka: Beitrag zur Kenntnis der Lungen-syphilis beim Erwachsenen, zugleich über sogenannte muskuläre Lungenerkrankung. Virchow's Archiv, Berlin, 1912, cxviii., 429.

² Cf. E. W. Taylor, Bone Syphilis, Hereditary and Acquired, New York Medical Jour. al, 1907, lxxxv., 7. Cf. also, on the whole subject, Emile Serment, Syphilis et Tuberculose, Paris, 1907. Gouret also (Journal des Praticiens, Paris, 1910, xxiv., 771) maintains that while tuberculosis does not predispose to syphilis, the latter certainly does to tuberculosis.

Reviews and Notices of Books.

1. *The Statutes, Regulations, and Orders relating to National Health Insurance.*

With Notes, Cross-references, and an Index. 1916. Published by Authority. London: Wyman and Sons. Edinburgh: H.M. Stationery Office, Scottish Branch. Dublin: E. Ponsonby, Limited. Colonies and Foreign Countries: T. Fisher Unwin, Limited. Pp. 691. Price 2s. 6d.

2. *The Panel Doctor: His Duties and Perplexities.*

By T. M. TIBBETTS, M.D. Lond., M.R.C.S. Eng., L.R.C.P. Lond., D.P.H., Member of the Staffordshire Insurance and Panel Committees. 1916. Birmingham: Cornish Brothers. Pp. 68. Price 1s. 6d. net.

1. DURING the last twelve months the various and numerous regulations and amending regulations governing the administration of National Insurance have been grouped and consolidated into codes, each dealing with a single subject, such as "The Collection of Contributions," "The Navy and Army," or "Married Women." An exception to this consolidation and codification has been made in the case of the regulations relating to medical benefit, which have been left untouched owing to the difficulties created by the war. All the regulations and the orders bearing on them have now been collected in the volume before us for the use of those administering the Acts, and the result is a book which is not over-bulky and which will probably be consulted by all concerned. As a matter of fact, it contains rather more than orders and regulations, as it includes the text of the two Insurance Acts with sections of other statutes affecting national insurance. A table shows the powers to make regulations and orders given by the Acts and states the regulations and orders which have been made. A third division of the work consists of the regulations and orders made by the joint committee and the four bodies of commissioners. These are set out in full, but care has been taken to avoid the repetition which would be made by reprinting regulations which are practically the same, although made by different bodies of commissioners, one set only being printed in such cases, variations, if any, being shown by footnotes. An official or other person interested, when once he has become familiar with it, should find this official statement and tabulation of the law convenient and an aid in the performance of his duties. Apparently it was intended originally to issue it at 6s., a price which has been printed on the cover, but which has been wisely altered to a modest half-a-crown, for re-issues are likely to recur from time to time in order to include fresh regulations and orders.

2. Dr. Tibbetts, wanting information upon some questions arising in his panel practice, which were not definitely answered in official literature or medical journals, set to work to write a short treatise on the subject for the benefit of others. That legal and medical writers had neglected the Insurance Acts as a subject for their industry we should hardly have ventured to suggest, but it can assuredly be said that in the little work before us the author has supplied a want which many must have felt. In it he gives us a sketch portrait of National Insurance in the working from the point of view of a member of a panel thoroughly conversant with the essential features of his subject. By this we do not mean that details are disregarded, but rather that the gist is given and that the reader is spared the citation of sections and regulations. Those who want to know about a medical man's insurance work are not necessarily medical men themselves, but those in or about to enter upon panel practice are the most concerned, and any of these can read what Dr. Tibbetts has to say in an evening, and then put it away for future reference when needed. Such a course may particularly be recommended to critics who are prone to express pessimistic or hostile opinions upon the subject of National Insurance. The author treats the duties and perplexities of the panel doctor with a certain breezy cheerfulness and plain, good sense, never forgetting the duties and obligations of the medical man towards his profession, but at the same time not allowing his reader to forget that there are duties which the medical man owes to the State when he contracts to work for it under laws and rules framed for his guidance. His observations upon the necessity

for strict accuracy in certification, coupled with his recommendation of the usefulness of "other remarks" where these are invited, are good examples of his tolerant attitude and of practical advice which may safely be followed by all concerned.

The Art of Anæsthesia.

By P. J. FLAGG, M.D. With 136 illustrations. London and Philadelphia: J. B. Lippincott Company. 1916. Pp. 341. Price 15s. net.

THIS book is good evidence of the attention and ingenuity that are being expended upon anæsthesia and all that pertains thereto by our American colleagues. In his account of the history of the subject the author breaks no new ground, but he has the originality to introduce pictures of Homer, Du Bartas, and Shakespeare, personalities whom one does not somehow expect to meet on turning over the leaves of a treatise on anæsthetics. Dr. Flagg is original also in his description of general anæsthesia as being of two classes, complete and incomplete. The complete he divides into stages of induction, maintenance, and recovery; the incomplete has no stage of maintenance. The author gives an excellent account of the causation of rigidity in the course of anæsthesia and of the correct treatment for its abolition. He has much to say with regard to carbon dioxide and rebreathing—in fact, this occupies a separate chapter—and points out that cyanosis may have nothing to do with the presence or absence of CO_2 , being entirely dependent upon the oxygen content of the blood. Nitrous oxide and oxygen together with ether, given by a rebreathing system, appear to form the author's favourite method of anæsthesia. With this he gives preliminary injections of morphine and atropine, but disapproves of the morphine before using open ether. With regard to chloroform he states that "in the light of present-day pathology chloroform should cease to be used as an anæsthetic in obstetrics." To replace the light chloroform narcosis usually employed in these cases by prolonged nitrous oxide, with its necessity for expert and apparatus, is at present, however, not within the bounds of practical politics. Although there is, perhaps, an excessive amount of space devoted to the machinery of anæsthetics, this book treats the whole subject in an enlightened spirit and deserves careful reading by every student of anæsthesia.

A Handbook of Colloid-Chemistry.

By Dr. WOLFGANG OSTWALD. First English edition. Translated from the third German edition by Dr. MARTIN H. FISCHER (Cincinnati), with the assistance of RALPH E. OESPER, Ph.D., and LOUIS BERMAN, M.D. London: J. and A. Churchill. Pp. 278. Price 12s. 6d. net.

WELL may the chief translator write: "The day is past when the importance of colloid-chemistry to the worker in the abstract or applied branches of science needs emphasis." And, as he points out, not only inorganic research but the organic also has chosen the colloid realm in which to manifest itself; living matter, whether of plants or animals, and under normal or pathological conditions, is chemistry in a colloid matrix, and so colloid-chemistry comes to concern every botanist and zoologist, the physiologist, and the practical man in medicine and surgery. Dr. Wolfgang Ostwald is a well-known authority on the subject, and he has carried out original investigations of the greatest significance and importance. About seven years ago the original German edition was issued, but it has never been translated into English, although it ran through three German editions. We have, of course, our own literature on the subject, but nothing perhaps so complete or classic as the volume before us, and yet the whole fabric of colloidal chemistry had its foundations well and truly laid by Thomas Graham as far back as 1861. There is a noble acknowledgment of the pioneer work in this book, and it was a happy conception to begin the new treatise on colloid-chemistry with a good portrait of Thomas Graham as frontispiece. The references to literature are very copious, and form a valuable feature of the work. Apart from physiological questions, we shall hear, if we mistake not, much more of the application of colloid-chemistry to therapeutic practice in the near future. This translation into English of a standard German handbook will therefore be welcomed, and the translator and his assistants will earn the thanks of many investigators.

New Inventions.

AN IMPROVED TYPE OF NEEDLE FOR LUMBAR PUNCTURE.

NEEDLES in common use for lumbar puncture are generally so constructed that the fluid emerges from an opening which has undergone considerable handling during the process of insertion of the needle and the sterility of which cannot be guaranteed. In order to obviate this risk Dr. G. Scott Williamson devised a needle whose stylette was attached to a metal cap. This latter fitted over the outer end of the instrument, and so protected the opening from contamination during manipulation of the needle into the spinal canal. Where the patient can be anæsthetised and placed in a suitable position this type of needle answers quite well. Where, however, lumbar puncture has to be performed without the aid of an anæsthetic and under adverse conditions, it happens frequently that the outer end of the needle points more or less directly upwards when the needle is *in situ*. If the fluid is under great pressure it spurts upwards or straight outwards, and is accordingly difficult to collect. If the pressure is less the fluid trickles out and runs back along the outer surface of the needle, and in doing so runs the risk of becoming contaminated.

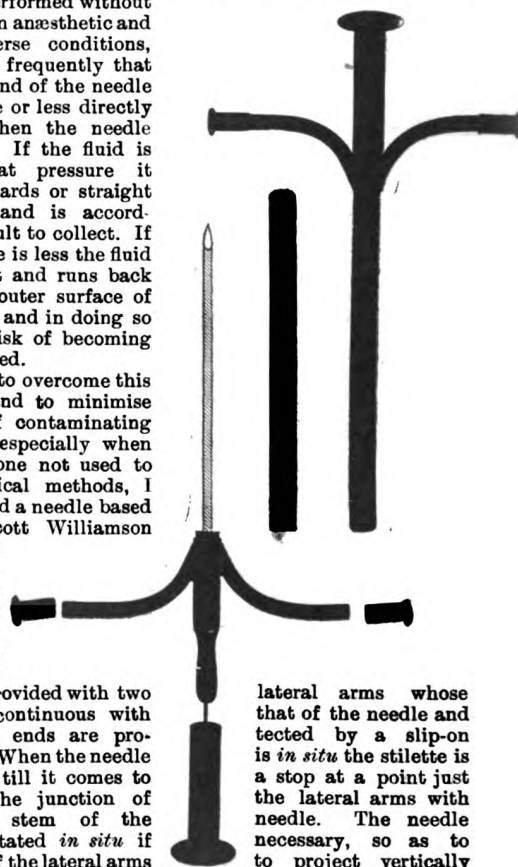
In order to overcome this difficulty and to minimise the risk of contaminating the fluid, especially when drawn by one not used to bacteriological methods, I have devised a needle based on the Scott Williamson type. As is shown in the accompanying illustration (drawn to $\frac{1}{2}$ scale) the

needle is provided with two lumens is continuous with whose free ends are protected by a slip-on metal cap. When the needle is withdrawn till it comes to distal to the junction of the main stem of the needle may be rotated *in situ* if allow one of the lateral arms downwards. The metal cap protecting this orifice is now removed, and the fluid is easily collected in a sterile tube or bottle with the minimum risk of contamination. When it is desired to introduce serum the metal cap can be removed from the upper arm and the rubber tube leading from the serum cannula slipped on in its place, or if it is desired to record the intrathecal pressure the upper lateral arm may be adapted for manometer purposes. Not only are the openings in the lateral arms protected from contamination, but the needle itself is protected when not in use by a screw-on metal cap, so that the whole instrument can be carried about ready sterilised. The needle is of good calibre, and is sufficiently strong to reduce the risk of breakage *in situ* to a minimum in cases where the patient is restive, while the lateral arms offer an excellent leverage in introducing or withdrawing the needle.

The needle has been made for me by Messrs. Mayer and Meltzer, London.

Reading.

ROBERT DONALDSON.



THE LANCET.

LONDON: SATURDAY, DECEMBER 9, 1916.

The Committee of Reference of the English Royal Colleges and the Problem of the Disabled Soldier.

THE Committee of Reference of the English Royal Colleges, a statutory body under an Order in Council, and appointed to advise the War Office through the Central Medical War Committee, have reported in clear terms upon the problem of the dischargeable disabled soldier. The Committee have worked in association with the Central Medical War Committee, and the two bodies have acquired definite information that a large number of disabled soldiers have already been discharged from the Army as being unfit for further military service; their case will be made the subject of a further report, which is already drafted. As the number of men thus "broken" will amount to many thousands before the war is over, the Committee urge that continued medical and surgical treatment should be organised for them at once, as success must depend on its being prompt. It is the especial function of the Committee of Reference to safeguard the interests of the civil community by ascertaining that civilian hospital staffs remain during the war adequate to provide medical and surgical treatment. If the disabled soldiers are discharged from military hospitals while requiring further treatment to render them useful members of the community, they will fall back upon the already depleted civilian hospitals, and a vast body of brave men, damaged while in the Army, may fail to obtain proper chances for return to civil life as useful citizens, capable in more or less degree of maintaining their independence. If such a position should arise for lack of forethought and effective machinery it would be a lasting reproach to all of us.

The Committee of Reference have confronted the situation squarely and agreed upon certain general principles. They hold that a considerable proportion of the disabled soldiers require continued institutional treatment, and that an essential condition of success in any scheme for such treatment is that the patient be thoroughly under discipline. As no form of discipline can adequately replace military discipline, they state that the disabled soldiers should not be discharged from the Army until a specially constituted board of medical experts has decided that no further institutional treatment will improve their condition, but they allow that such treatment cannot be extended beyond some maximum limit of time to be determined by the military authorities. These principles, or conclusions, have been arrived at by consideration of the probable number of men

concerned, the classes under which their cases would fall, and the possibility of any substitute for military discipline which would secure with certainty the continued treatment. The terms of the report of the Committee of Reference are so clear and so far-reaching that it must necessarily move the military authorities either to undertake the task of the continued treatment of the disabled soldier or to render every assistance to some alternative scheme, such as the setting up of convalescent camps, similar to military convalescent camps. But the number of these would have to be extended as occasion required, for no data are at present forthcoming as to the number of men already discharged who would be benefited by continued treatment, while the uncertain duration of the war makes speculation as to the ultimate figures valueless. The Memorandum attached to the report considers the problem under two heads, premising that the wounded men are allowed to remain in the Army for some period. The first of these heads, the provision of institutional treatment for those who can only be satisfactorily treated in this way, is discussed at greater length; the second, the provision of temporary supervision for those who can be treated at home, is dealt with by the obvious statement that this will have to be left to local activities, assisted by the advice of local practitioners. A classification is then made of medical and surgical cases which should be treated in institutions, with subsequent transference to homes where attention can be given until the maximum benefit has been obtained; and the Committee suggest that the centres for the convalescent patients should take the form of annexes to the existing military convalescent camps. In regard to cases of neurasthenia and shell shock, other than mental cases, they point out that special treatment under military control may be required, but that it should not be given in camps specialised for the purpose, such patients deriving benefit from distribution among others. Mental cases the Committee consider require institutional treatment under the care of specialists, while tuberculosis cases present the difficulty that in one group the pathological manifestations may be due to the recurrence of definite disease present before enlisting, while in another group the disease may have been acquired on active service. The Committee hold that no soldier suffering from tuberculosis should be discharged from the Army, but that all these men should be treated under military discipline until the best possible has been done, with the admission that in prolonged cases the military authorities would have to prescribe some time limit for their responsibilities.

The conclusions of the Committee of Reference, therefore, are that dischargeable disabled soldiers should be kept in the Army until they have gained all the good that can be expected from institutional treatment administered over some maximum period; that they should be retained, in great majority, in military hospitals until they are fit to be discharged to convalescent camps; that annexes to these camps

should be set up where the cases could be treated by the officers of the Royal Army Medical Corps with civilian help. They consider that in the convalescent camps the treatment should be as far as possible the same as that of soldiers who are expected to return to active duty, save that technical and mechanical treatment should take the place of military exercises, while they think that special boards should be set up to supervise not only general cases, but ophthalmic, neurasthenic, epileptic, and mental ones. The Memorandum deals only with the treatment of soldiers who have not as yet been discharged from the Army; the case of the numerous soldiers already discharged and disabled is being dealt with separately. The Committee state clearly that they cannot contemplate that the military authorities will refuse to undertake the task of the treatment of disabled soldiers, and point out the objections to the only alternative way of meeting the situation—namely, the setting up of a number of new camps similar to the military convalescent camps.

The Metropolitan Water-Supply and the War: Chlorination Adopted.

Two valuable and interesting documents were issued last week by the Metropolitan Water Board. One is the Tenth Annual Report on "The Results of the Chemical and Bacteriological Examination of the London Waters for the Twelve Months ended 31st March, 1916," by Dr. A. C. HOUSTON, Director of Water Examination, Metropolitan Water Board, and the other is "The Twelfth Report on Research Work," by the same author. Both reports refer to the influence of the war on metropolitan water administration. To begin with, Dr. HOUSTON introduces his tenth annual report by remarking that the results of the examination of the London waters over so considerable a period would in ordinary circumstances have called for a long and detailed report. Under existing conditions, however, he has thought it desirable to place only the chief facts on record in a series of tables, which are, of course, available for future reference. This plan has resulted in the curtailment of the number of pages from 61 (last year) to about 40 this year. The war has brought on the staff the inconveniences of many changes, but the work of conducting the examinations has not been allowed to suffer. Dr. HOUSTON acknowledges this to be due to the loyal efforts of the remaining nucleus of his original staff and to the adaptability shown by those who are acting as temporary substitutes. This at a time when the maintenance of the purity of the London water-supply is more important than ever is very satisfactory, for one effect of the war may be to render water-supplies exposed to pollution more dangerous than previously, owing to the increased number of disease "carriers." During the current year the general quality of the water-supply has not deteriorated, although the extra pressure of work thrown on the engineering department, consequent

upon the war, has been serious, and there has been trouble with algal growths.

A very important announcement is made in the Twelfth Report on Research Work. Certain events of a serious nature, writes Dr. HOUSTON, arose in connexion with the Water Board's supply of coal. Owing to the war, the price of coal advanced not only to an unprecedented extent, but it became imperative, in the national interest, to reduce its consumption to the lowest practicable limit. Now the raw river water is circulated through storage reservoirs in order to improve its quality by sedimentation, but the continuous pumping of 70 to 80 million gallons daily of raw Thames water into the reservoirs involves the expenditure of a very large sum of money on coal. An alternative and much cheaper plan is to leave the reservoirs full and to pass the river water direct on to the filter-beds after it has undergone a process of treatment which has proved to purify the raw water to a higher standard than is reached in stored water. This treatment consists in adding a definite quantity of chloride of lime (bleaching powder) to the raw water. The result has been to produce a water of as great or greater bacteriological purity than that of water stored in the Staines reservoir, and during the summer months 75 million gallons per day were so treated. As regards cost, less labour is required for chlorination than for pumping. With a dose of 0.5 part of available chlorine per 1,000,000 parts of water (or 15 lb. of chloride of lime of 33 per cent. strength per 1,000,000 gallons) the war cost of the material is calculated at about 3s. The war cost of coal to pump 1,000,000 gallons would be about 13s., so that the saving per day on, say, 75 million gallons of water would be £262 10s. per week. Dr. HOUSTON regards these results as most gratifying, but, as he points out, the season of the year must be borne in mind, and similar results can hardly be expected during the winter months, when the river water becomes heavily charged with suspended matter. That the London water has received chemical treatment will surprise many public health authorities, and it is doubtful whether the plan would have been adopted if it had not been for the circumstances of the war. But Dr. HOUSTON shows that a large sum of money has been saved without detriment to health; and, in the second place, the national interests have been served by reducing largely the consumption of coal. Some such treatment on a practical scale was anticipated, for this was indicated by the researches on raw Thames water which have been carried out for some time in the laboratories of the Metropolitan Water Board.

CENTENARIANS.—The death has recently been announced at Norwich of Miss Nancy Baillie, at the age of 102. Her father was first-cousin to Dr. Matthew Baillie (physician to Queen Caroline) and to Joanna Baillie, the dramatist and poet. The mother of the physician and the author was sister of John and William Hunter. It is interesting to note that though the birth of Joanna Baillie was premature, she lived for 88 years, while her sister died at the age of 100.—The death is also announced of Mary Anne Vyse, at Enfield Workhouse Infirmary, on Nov. 29th aged 104.

Annotations.

"No quid nimis."

THE DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH.

THE Government have decided to establish a separate Department of Scientific and Industrial Research for Great Britain and Ireland under the Lord President of the Council, with the President of the Board of Education as Vice-President. They have also decided, subject to the consent of Parliament, to place a large sum of money at the disposal of the new department to be used as a fund for the conduct of research for the benefit of the national industries on a coöperative basis. The Board of Inland Revenue have decided, with the approval of the Chancellor of the Exchequer, that no objection shall be offered by their surveyors of taxes to the allowance, as a working expense for income-tax purposes, of contributions by traders to industrial associations which may be formed for the sole purpose of scientific research for the benefit of the various trades; and the allowance would be equally applicable as regards traders' contributions specifically ear-marked to the sole purpose of the research section of an adapted existing association. In both cases the allowance would be subject to certain conditions—e.g., the association or the research section to be under Government supervision and the traders' contribution to be an out-and-out payment, made from his trade profits and giving him no proprietary interest in the property of the association.

In order to enable the department to hold the new fund and any other money or property for research purposes, a Royal Charter has been granted to the official members of the Committee of the Privy Council for Scientific and Industrial Research, under the title of the "Imperial Trust for the Encouragement of Scientific and Industrial Research." The Trust is empowered "to accept, hold, and dispose of money or other personal property in furtherance of the objects for which it has been established, including sums voted by Parliament to that end." The Trust can take and hold land and can "accept any trusts, whether subject to special conditions or not, in furtherance of the said objects." A substantial gift has already been made to the Trust by two members of the Institution of Mechanical Engineers for the conduct of a research in mechanical engineering to be approved by the department in the hope that this example will be followed by other members of the institution.

Mr. H. Frank Heath, C.B., has been appointed permanent secretary of the new department, to whom all correspondence should be addressed until Dec. 31st next at the Offices of the Board of Education, Whitehall. On and after Jan. 1st, 1917, all correspondence should be addressed to the Secretary, Department of Scientific and Industrial Research, Great George-street, Westminster, S.W.

THE MENTAL STRAIN OF INTERNMENT.

THE statement in a recent Berlin telegram that 1 in 10,000 of all prisoners of war in Germany have committed suicide confirms the anxiety which has been widely felt regarding the mental effect of confinement on our own prisoners of war and interned civilians. Dr. zum Busch, in an article

from which we have already quoted, made the frequent mental breakdown of the interned German civilian in this country the occasion of reproach to our methods. But as much doubtless depends on the mental condition and equipment of the prisoners as on the conditions of their confinement. In this connexion it is consoling to learn from Dr. Herbert Bury, Bishop for North and Central Europe, that during his visit at Ruhleben last week he found no evidence of ennui or mental deterioration among the large population there and only 60 to 70 cases of mental breakdown as the product of two years' confinement, these being isolated in a sanatorium half an hour distant from the internment camp under the care of Dr. Weiler, a well-known alienist. This reassuring result Dr. Bury attributes to the splendid spirit of our interned men as well as in some measure to the means taken to stimulate their mental life. Regular classes of various kinds are held. There is a well-equipped scientific workroom and biological laboratory, and Dr. Bury's allusion to the special need at present of a spectroscope emphasises the high level of the work being done. The whole is in marked contrast to the terrible mental depression once prevailing at Gardelegen and Wittenberg as a result of hardship and ennui.

THE WHIPPING CRAZE.

THE alarming increase of juvenile crime in our large cities during the past few months has given rise to a widespread demand for the use of sterner methods in dealing with youthful offenders, and it has been urged with special insistence that an effective means of counteracting this growing evil would be to enlarge the powers of courts of summary jurisdiction so as to extend the whipping age from 14 to 16 years. Proposals of this drastic character are peculiarly congenial to the moral atmosphere of the moment, and it would not, therefore, be quite safe to assume that the warm support which this proposal has received from magistrates and other officials, and from a section of the press, is necessarily, or even probably, the outcome of cool and dispassionate judgment. In any case, it is clearly desirable, before the adoption of so considerable and so reactionary a change in penal methods, that there should be some definite evidence to connect the present outbreak of disorder with conditions on which corporal punishment may be reasonably expected to exercise a real influence. So far, it can hardly be said that any evidence of this sort is forthcoming. *Prima facie*, indeed, it would rather appear that the more obvious causes of the growth of juvenile crime would not be affected at all, or would be affected in an undesirable way, by the freer use of whipping. It is as true of the youthful offender as it is of the adult criminal, that the certainty or the strong probability of detection is a far more effectual deterrent than any severity of punishment. And no fear of the birch will prevent the young hooligan from recognising that under present conditions, with darkened streets and a depleted police force, his chances of being caught are fairly small. The threat of whipping would be equally ineffectual against what is probably a more frequent and more potent cause of youthful misconduct—namely, the spirit of adventure engendered by the war. This spirit would not be cowed by the fear of a whipping; it is much more

likely, indeed, that the added element of physical risk would act as a stimulus rather than as a deterrent, and that inclusion in the police court "casualty list" would merely give the victim something of the glory of a wounded hero. In this connexion it has also to be borne in mind that judicial whipping, whatever be its value as a corrective of criminal tendencies, may in many cases have permanent psychic effects of a peculiarly undesirable kind, especially when the punishment is inflicted on boys about the age of puberty. This is an aspect of the question about which advocates of corporal punishment generally know very little, and they may therefore profit by perusing the sensible remarks which Mr. H. S. Salt devotes to the point in his recently published essay on "The Flogging Craze" (George Allen and Unwin, Limited, London, 1916, price 2s. 6d. net). They may also derive some benefit from pondering the other arguments which Mr. Salt has set out in his interesting, if somewhat polemical, statement of the case against flogging. These arguments do not, perhaps, establish all that the author would infer from them, but they will certainly go far to strengthen the view that the remedy for juvenile lawlessness is to be sought, not in the rehabilitation of the somewhat discredited method of the birch, but in the direction into healthier channels of the exuberant and adventurous energies of boyhood. The best way to cure the boy criminal is, if possible, to turn him into the Boy Scout.

INFANTILE MORTALITY IN BRITISH COLUMBIA.

IN British Columbia the deaths of infants under one year are mentioned in each of the two latest annual health reports, and they are noticeably few, giving very low figures of infantile mortality, 45 in 1914 and 57 in 1915. Of a province so extensive, larger than Spain, with a population of approximately one person to the square mile, minute accuracy in statistics cannot be predicated, but deaths are less likely to go unregistered than births, so the infantile mortality will not be less than that shown on the records. A correspondent in British Columbia has sent us an interesting comparison. Taking the Registrar-General's Report for 1911, he compares the figures for England and Wales in that year with the latest that have come from British Columbia. British Columbia has roughly the population of Warwickshire outside the county boroughs, and a higher birth-rate though fewer women. While of its chief cities Vancouver may be compared with Plymouth as regards size, and Victoria with Chester. Then we see:—

| | Popula- tion. | Births registered. | Deaths under one year. | Infantile mortality. |
|------------------|------------------|-----------------------|------------------------------|-------------------------|
| 1915. | | | | |
| British Columbia | 395,571 | 10,270 | 590 | 57 |
| Vancouver | 120,000 | 2,680 | 175 | 65 |
| Victoria... .. | 40,000 | 960 | 47 | 49 |
| 1911. | | | | |
| Warwickshire ... | 394,180 | 9,547 | 1,076 | 113 |
| Plymouth | 112,146 | 2,644 | 378 | 143 |
| Chester... .. | 39,047 | 937 | 102 | 109 |

These figures show how low is the infantile mortality which prevails throughout British Columbia as a result of its large open spaces and the moderate, equable temperature of its more densely populated regions. Again, the mortality

from various groups of diseases was markedly lower in British Columbia in 1915 than in England and Wales in 1911. Thus, the Registrar-General's first group (Table XXVIII.), common infectious diseases, in England and Wales 7·57, gave in British Columbia a mortality of only 2·19; for Group II., tuberculous diseases, the figures were 4·15 and 1·28; and for Group III., diarrhoea, 39 and 5·8, less than one-sixth. Consequently, both by reason of its large birth-rate and its small infantile mortality, British Columbia would appear able to rapidly increase its population once the war has ended.

THE MEDICAL DIRECTORY.

THE numerical summary of the medical profession in the new Medical Directory for 1917—the seventy-third annual issue—shows a gratifying increase for 1917 in the number of medical practitioners possessing a registrable qualification in the British Isles. 309 more names appear than a year ago, when there was actually a drop of 2 on the numbers of the previous year. The additions involve an increase of eight pages in the size of the volume, which is otherwise substantially unaltered. The summary of the principal laws affecting the medical profession contains a useful appendix dealing with the legislation of the past year. The honours list, of course, occupies more space than a year ago, and now includes 18 holders of the Victoria Cross and 245 of the Military Cross. The additions in the Directory itself bring it fully up to date with the exception of titles of military rank, which are subject to frequent change. We are glad to see that the section of Practitioners Resident Abroad is retained, although its compilation must involve special difficulties at the present time.

THE jubilee celebration of the New Hospital for Women, Euston-road, is to take place next Tuesday, Dec. 12th, at 2.45 P.M. Sir Alfred Keogh, Mrs. Scharlieb, Sir John Bland-Sutton, and Dr. Louisa Garrett Anderson are expected to speak.

AT the meeting of the Medical Society of London on Monday next, at 8.30 P.M., demonstrations illustrating the principles of the re-education of the wounded will be given. Mr. Arnold Lawson will detail the work being done for the blind at St. Dunstan's and Mr. F. Derwent Wood, A.R.A., will describe "facial restoration." Dr. J. B. Mennell will discuss limping and the re-education of walking, and Mr. McMahon the treatment of shell-shock stammering.

CHILD-WELFARE WORK IN IRELAND.—The Local Government Board for Ireland have not formulated any complete scheme of maternal and child-welfare work, leaving it rather to the various local authorities to submit local schemes for their approval. A sum of £5000 has been earmarked for this purpose in Ireland. At the recent annual meeting of the Bangor District Nursing Society, Sir John Byers suggested two schemes, one applicable to cities, the other to smaller towns and rural districts. In the first scheme, existing maternity hospitals were to be subsidised to form maternity centres with the opportunity of research work and facilities for pathological examinations. Schools for mothers should be the other agency in this scheme. In the second, the existing nursing associations were to form the basis of the scheme, with the assistance in turn of the doctors of the district and the retention of a few beds at cottage hospitals for serious cases. No scheme has yet been completely arranged for Belfast, Cork, or Dublin.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

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WEDNESDAY, NOV. 29TH.

THE Council resumed its sittings at its offices, 44, Hallam-street, W., Sir DONALD MACALISTER, the President, being in the chair.

Penal Cases.

A case was taken which was adjourned from May 25th—Daniel Evans Powell, registered as of 101, High-street, Tooting, S.W., M.B., C.M., 1894, U.Glasg., who had been summoned to appear before the Council on the following charge:—

That being a registered medical practitioner you by your assistance knowingly enabled one Jenny Walter, a woman not certified under the Midwives Act, 1902, to attend women in childbirth under cover or pretence that such women were attended or to be attended by you or by her under your direction, thereby enabling the said Jenny Walter in contravention of the said Act to practise as if she were certified thereunder. And that in relation thereto you have been guilty of infamous conduct in a professional respect.

The complainants were the Central Midwives Board.

At the conclusion of the proceedings of the General Council on May 25th the President announced its decision as follows:—

Mr. Daniel Evans Powell: The Council has carefully considered the charge made against you, which, in effect, was that you had by your assistance knowingly enabled a woman not certified under the Midwives Act, 1902, to attend women in childbirth under cover or pretence that such women were attended, or to be attended, by you, or by her under your direction, thereby enabling her to practise as if she were certified.

The facts alleged against you in the charge the Council has found to be proved.

The Council takes a very grave view, in the public interest, of the danger which arises from medical practitioners lending their names for such a purpose and "covering" the practice of unqualified or uncertified women, under whatever pretext they practise midwifery or otherwise attend and treat women in labour. But in order to give you an opportunity of reconsidering your position in relation to this matter the Council has postponed judgment in your case till the next session in November, of which you will receive due notice. You will then be required to attend, and to produce testimony from your professional brethren as to your character and conduct in the interval.

Mr. Powell attended, and was represented by Mr. Philip Webster Butcher, solicitor.

The Central Midwives Board were represented by Mr. Julius Bertram, their solicitor.

Mr. BUTCHER, on behalf of Mr. Powell, submitted testimonials as to character from a number of registered medical practitioners and expressed regret for Mr. Powell's past conduct.

Mr. BERTRAM stated that as a result of his inquiries he had ascertained that the London County Council had no further evidence to bring before the Council, and he went on to say that he had heard with pleasure the nature of the communication addressed to the Council on behalf of Mr. Powell.

The PRESIDENT announced the decision of the Council as follows:—

Mr. Powell: I have to announce to you that the Council has carefully considered the evidence which you have sent, in proper time, as to your conduct in the interval, and the assurance which you have given as to your conduct in the future, and has not seen fit to direct the Registrar to erase your name from the Medical Register.

The Council took up the consideration of the case of Thomas Dixon Cook, registered as of Glendon, Torquay, M.B., C.M. 1879, U. Glasg., who had been summoned to appear before the Council on the following charge:—

That being a registered medical practitioner you by your assistance knowingly enabled Mrs. Eliza Martin, whose name has been removed by the Central Midwives Board from the roll of midwives, and Mrs. E. Beare and Mrs. Lambie, neither of whom was certified under the Midwives Act, 1902, to attend women in childbirth, under cover or pretence that such women were attended or to be attended by you or by her under your direction thereby enabling the said Mrs. Eliza Martin, Mrs. E. Beare, and Mrs. Lambie in contravention of the said Act to practise as if they were certified thereunder. And that in relation thereto you have been guilty of infamous conduct in a professional respect.

The complainants were the Central Midwives Board.

Mr. Cook attended.

The Central Midwives Board were represented by Mr. Julius Bertram, solicitor.

Mr. BERTRAM, in opening the case, explained that the complaint arose out of prosecutions before the magistrates of Torquay in respect to the employment of uncertified women as midwives. The Council had always taken the view that an offence had been committed where a practitioner assisted an uncertified woman attending maternity cases to conduct her practice. The allegation here was that none of the cases were Mr. Cook's cases at all. In this case there were many features common to other complaints of a similar nature that had been brought before the Council. The

patients varied in their accounts as to whether the services of Mr. Cook were arranged for beforehand, but in the documentary evidence he had submitted Mr. Cook went so far as to say that he never at any time had the intention of being present at the actual delivery.

Several witnesses were called by the complainants. Some of these were women, who stated that they had been attended at their confinements by one or other of the uncertified women in question. Mr. Cook, they said, had visited them afterwards and had signed maternity benefit certificates.

Mr. COOK made a statement on his own behalf. He said that his work was in a parish having many poor people. They were unable to pay the fee for a medical man and a midwife, and there had been a scarcity of certified midwives. He had been asked by a district visitor and others to look after these poor women. The understanding had been that the women who were attending the confinements were to send for him if he was needed. They could be thoroughly depended upon. He never had had any fault to find with them. He had seen the patients afterwards. They were poor, and he did not charge them a maternity fee. He only charged a visiting fee.

The PRESIDENT announced the decision of the Council as follows:—

Mr. Cook: The Council has very carefully considered the charge made against you, which, as you know, was in effect that you had by your assistance knowingly enabled women not certified under the Midwives Act, 1902, to attend women in childbirth under the cover or pretence that the women were attended by you, thereby enabling them to practise as if they were certified. The facts alleged against you in the charge the Council has found to be proved. The Council takes a very grave view, in the public interest, of the danger which arises from a medical practitioner who lends his name for such a purpose and "covers" the practice of unqualified or uncertified women, under whatever pretext they practise midwifery, and whatever may be his personal opinion as to their skill and capacity to attend and treat women in labour. But in order to give you an opportunity of reconsidering your position in relation to this matter, the Council has postponed judgment in your case till the next Session, in May, of which you will receive due notice. You will then be required to attend, and to produce testimony from professional brethren in your district as to your character and conduct in the interval.

The Council adjourned.

THURSDAY, NOV. 30TH.

The Council resumed its sittings and the consideration of further penal cases.

FRIDAY, DEC. 1ST.

The Council continued the hearing of

Penal Cases.

The first to be considered was the case of Edmond Heskin, registered as of 27, West-street, Leeds, M.B., B.S. 1900, R.U. Irel., who had been summoned to appear before the Council on the following charge:—

That being a registered medical practitioner you were at the Leeds Assizes commencing on July 13th, 1916, convicted of the following felony: namely, of unlawfully killing one Banché Amy Pamrey, and sentenced to 12 months' imprisonment in the second division.

Mr. Heskin did not attend nor was he represented.

The PRESIDENT in intimating the decision of the Council said: I have to announce that Edmond Heskin having been proved to have been convicted of the felony alleged against him in the Notice of Inquiry, the Registrar has been directed to erase his name from the Medical Register.

The Council considered the case of Henry Percy Jelley, registered as of 174, High-street, Homerton, N.E., L.M.S.S.A. Lond. 1910, who had been summoned to appear before the Council on the following charge:—

That being a registered medical practitioner you were on July 18th, 1916 convicted at the Central Criminal Court of the following felony: namely, of unlawfully killing one Elizabeth Caroline March, and sentenced to three years' penal servitude.

Mr. Jelley did not attend nor was he represented.

The PRESIDENT intimated the decision of the Council as follows: I have to announce that Henry Percy Jelley having been proved to have been convicted of the felony alleged against him in the Notice of Inquiry, the Registrar was directed to erase his name from the Medical Register.

Straits Settlements Medical Qualification.

The Executive Committee reported that it had adopted a resolution to the following effect:—

That any person who holds the L.M.S. diploma of the King Edward VII. Medical School, Singapore, granted after examination in Medicine, Surgery and Midwifery and who is entitled by law to practise Medicine, Surgery, and Midwifery in the Straits Settlements, shall be entitled to be registered in the Colonial List of the Medical Registrar, provided he satisfies the Registrar of the General Medical Council regarding the other particulars set forth in Part II. of the Medical Act, 1886.

Japanese Qualifications.

The Executive Committee also reported that it had adopted a resolution—

That any person who holds the degree of Bachelor of Medicine (Igaku-shi) of any Government or prefectural special Medical College, or of a private special Medical College designated by a Minister of Education of the Empire of Japan, shall be entitled to be registered in the Foreign List of the Medical Register.

Pharmacopœia Committee.

A report was received from the Pharmacopœia Committee to the effect that the number of copies of the British Pharmacopœia, 1914, which were sold by the publishers between May 20th, 1916, and Nov. 25th, 1916, was 1635. The total number sold since Jan. 1st, 1915, is thus about 27,035 copies. Of the second issue, published in May, 1915, about 1450 copies remained in stock at the present date. A third issue would probably be required in 1917. The committee recorded with gratification that His Majesty has been pleased to confer the honour of knighthood upon Sir Nestor Tirard, senior editor of the Pharmacopœia and secretary to the Pharmacopœia Committee for 20 years.

Anatomy Acts Committee.

Dr. Elliott Smith, Dr. Dixon, and Dr. Symington were added to the Anatomy Acts Committee.

Preliminary Examination in General Knowledge.

The Education Committee presented a report upon the compulsory inclusion of Latin in the preliminary examination in general knowledge. The first part of the report, which led to an interesting debate, became the subject of a motion which would make Latin an optional subject for students who have passed well-standardised preliminary examinations. This motion was carried; but an amendment referring the second part of the report, dealing with the retention of Latin as an obligatory subject of the junior entrance examination, back to the Education Committee was carried.

Recommendations.

The Council agreed to the adoption of the following recommendations by the Education Committee re-stating its conditions of recognition:—

1. That the Regulations prescribed by the Council for the recognition of examinations as published on pages 7 to 11 inclusive of the "Regulations of the General Medical Council in regard to the Registration of Medical and Dental Students," shall be altered so as to read as follows, viz.:—The following Regulations are subject to alteration and addition from time to time.

1. It shall be delegated to the Education Committee to prepare and issue from time to time a list of examining bodies whose examinations in general education fulfil the conditions of and are specially recognised by the General Medical Council.

2. The following examinations have been approved by the Council: (a) The final examinations for the degrees in arts and science of any University of the United Kingdom or of the British Dominions. (b) All examinations which are accepted for matriculation in the Faculties of Arts and Science in any University of Great Britain, provided the pass-certificate includes English, mathematics, and at least two other subjects named in the following list: Latin, Greek, Arabic, Persian, French, German, Spanish, Italian, Russian, or any approved modern language, history, geography, natural philosophy or physics, chemistry, biology, physical geography and geology. (c) All examinations not included under the foregoing section (b), which are accepted for matriculation in the Faculty of Medicine in any University of the United Kingdom provided the examination is completed at not more than two periods of examination, and that the pass-certificate includes English with geography and history, mathematics, Latin, and at least one other subject named in the following list: Greek, Arabic, Persian, French, German, Spanish, Italian, Russian. (d) The Council may grant special recognition to the following examinations not included under the foregoing sections (a), (b), and (c):—(1) The final examinations for the degree in arts and science of any specially recognised foreign University. (2) Examinations conducted by approved examining bodies within the United Kingdom under the provisions set forth in the foregoing section (c).

3. Examinations conducted by approved Examining Bodies out of the United Kingdom under the provision set forth in the foregoing section (c), and under such other conditions as the Council may impose in each case.

11. That nothing in the previous recommendation shall affect Ireland, and that the rules hitherto in operation as published in the Council's "Regulations for Registration" of June, 1916, shall continue in force in that country.

Dental Education and Examination Committee.

Mr. TOMES presented a report from the Dental Education and Examination Committee dealing with matters of detail. He observed that there was a shortage of dentists in this country. The report was received.

The PRESIDENT announced that the Council had considered in camera a report from the Dental Education and Examination Committee in regard to the dental curriculum.

Public Health Committee.

Sir J. W. MOORE presented a report from the Public Health Committee dealing with the diplomas in Public Health granted by various licensing bodies. He explained that the report was an interim one. The report was remitted to the committee for completion and comment.

Apothecaries' Hall of Ireland.

Dr. TAYLOR presented the report of the Examination Committee, which had reference to the various matters relating to the Apothecaries' Hall of Ireland. He moved that the Council adopt the recommendation of the committee to the effect:—

That the Irish Branch Council be authorised to appoint for a period of one year a deputy to attend and be present on behalf of the General Medical Council at the professional examinations held by the Apothecaries' Hall for the purposes set forth in Sect. 18 of the Medical Act, 1858; that the Deputy so appointed present to the Council a report on the general character of such examinations; and that he be paid a salary of £50 for the year in question.

Sir J. W. MOORE seconded.

Dr. MAGENNIS moved as an amendment—

That the inspections of the examinations of the Apothecaries' Hall of Ireland by deputy or other person be suspended until such time as the inspections of the other licensing bodies, which have been suspended for some years, be resumed.

He contended at considerable length that the Apothecaries' Hall of Ireland had been unjustifiably harassed in regard to their examinations.

The amendment did not find a seconder.

The motion of Dr. Taylor was agreed to.

The session then concluded.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Adherent Cicatrices Freed without Operation.

THE persistence of adherent cicatrices in gunshot wounds is a frequent cause of impairment to the function of muscles, blood-vessels, and nerves, and may require operative interference. Dr. Bourguignon add Dr. Chiray have described at the Medical Society of Hospitals in Paris a proceeding which appears to solve this difficult problem, and consists in ionisation with potassium iodide. Experimental research as well as actual cases treated have already shown that the method produces rapid liberation of muscles and nerves, and probably also of the blood-vessels.

Provisional Artificial Limbs.

Dr. Svindt, the Danish head of the Danish hospital in Paris, introduced some time ago the use of a cardboard leg for amputation cases. It consists of a long hollow cone attached at the smaller end to a short wooden cylinder provided with a rubber disc, the whole resembling a big megaphone. The leg is made of two long trough-like pieces of cardboard cut to the measure of the sound limb, tapering below and embracing the stump above. The pieces fit one into the other, the stump is inserted, and silicated bandage wound round the whole from top to bottom. Above, the margin of the hollow interior is rounded off with cotton wool; it is horizontal and surrounds the limb at about the level of the perineocrural fold, the base of the ischium, and the lower crest of the great trochanter, resting upon the ischium. Equilibrium is ensured by a broad strap attached in front to the upper part of the cone slightly on the internal face, passing over the opposite shoulder and fixed to the cone behind. The end of the stump is free in the cone and does not rest on any platform; the apparatus can hence be adapted to stumps not quite soundly healed. The weight of the limb varies from 1.3 to 1.7 kg.—round about 3 lb. It can support a weight of 200 kg.; the price is between 5 and 6 frs.; and it can be delivered 3 to 4 days after the measure has been taken. From the second day of trial—in some cases from the first—the patient can dispense with his crutches, using only a stick with rubber end. The great advantage of the apparatus is that it permits an amputation case to walk two or three months sooner than with his permanent artificial limb; he therefore does not have to watch his stump acquiring the faulty position which it always does when crutches preclude its proper use.

The Susceptibility to Cold of Tropical-dwellers.

M. Bussi res, m decin-major of colonial troops, has made an investigation into the way in which soldiers coming from tropical Africa generally manifest their special susceptibility to cold. He found that 20 per cent. of the bed-patients in camp at St. Rapha l-Fr jus and at the Senegalese hospital at the Gall ni camp had albumin in their urine, showing a renal affection. In pneumonic cases the percentage rose to 100. In these men there exists a condition of the kidney produced by cold which facilitates a renal infection with the pneumococcus. Black soldiers, according to M. Bussi res, are incapable of resisting a winter in the trenches and must be transferred to the South during the bad season.

A Military Sanatorium.

M. Justin Godart, Under Secretary of State for Hygiene, has just officially opened the Sanatorium of Beau Soleil for the reception of military convalescents with early tuberculosis. The sanatorium, which owes its origin to two generous legacies, is situated on a wooded hill, with full south aspect, looking out over the Isles of Hy res.

Dec, 4th.

THE CONTROL OF VENEREAL DISEASES.

SOME PRACTICAL POINTS IN THE EXAMINATION OF SPECIMENS FOR DIAGNOSIS IN VENEREAL DISEASES.

II.¹

THESE brief notes have been written by Mr. CLAUDE H. MILLS, assistant surgeon to St. Paul's Hospital for Skin and Genito-urinary Diseases, medical officer in charge of the syphilis ward at Rochester Row Military Hospital, 1914-16. Their object is to help those who have not hitherto had a wide experience in this specialty to arrive at an early, rapid, and accurate diagnosis.

(a) For Detection of Gonococci.

(i.) In the case of a smear preparation obtained from an early case of urethritis when a mixed infection is improbable—i.e., during the first week or ten days—staining with Kühne's methylene-blue for two to three minutes provides a rapid and accurate diagnosis, the formula being: Methylene-blue, 1.5 gm.; abs. alcohol, 10 c.c.; dissolve for 24 hours and add 5 per cent. ac. carbolic, 100 c.c.

Precautions.—Do not overheat slide in fixing. Always apply the stain through a filter-paper. With this method a positive diagnosis is only justifiable when the specimen exhibits very numerous intracellular diplococci with their adjacent borders concave.

(ii.) In specimens obtained from a urethritis at a later date, when the infection is likely to be mixed, and always in examining urinary deposits, a differential stain is essential, and for this Gram's method, with its several modifications, is indispensable.

Precautions.—As above. Avoid delay in examining a specimen of urine, which should always be freshly passed. Gonococci become swollen and rounded if allowed to remain too long in the urine, closely resembling staphylococci, which latter tend to become Gram-negative under these circumstances.

(iii.) The most reliable method of all is that of isolation by culture, the most suitable medium for gonococci being blood-agar (or Gurd's and Wertheim's serum media). In all cases possessing the possibility of litigation, corroboration of the diagnosis by culture should never be omitted.

Precautions.—(a) Special care should be taken to obtain the specimen as free from contamination as possible, by the methods previously described. (b) Transfer specimen direct to warm medium (37° C.) and replace same in incubator, permitting a minimum of cooling down.

(b) Method for the Detection of the *S. pallida*.

(i.) **Ground stains.**—In this method the material for the examination is well mixed with an equal quantity of the stain (one minim of each) at one end of the slide, and then drawn out as a film. The colourless spirochætes are distinguished standing out in a stained background.

Burri's Indian-ink method.—The ink that I have found most satisfactory for this work is the "Chin-Chin" brand (Gunther and Wagner), and at the time I was relying chiefly upon this method,² I found that the addition of tr. iodine π . xv. to the $\frac{1}{4}$ oz. gave a better film with cleaner definition.

Technique.—The clean slide upon which the film is drawn should be free from scratches and be polished with silk. The edge of the slide used for the "drawing" should have irregularities previously removed by gently grinding upon an oil-stone. Do not make the film too thick; removal of excess of fluid with filter-paper before "drawing out" will prevent this. Specimens should include a minimum number of blood cells.

Harrison's collargol method.—As above, using 5 per cent. collargol in place of the Indian ink. This gives a less granular background, but of a lighter colour (red-brown).

Congo-red method.—As above, using 2 per cent. Benian's Congo-red. The dry film is then washed with 1 per cent. solution of HCl in abs. alcohol. The background is a homogeneous light blue. Spirochætes stand out faintly by contrast, but when visible their shape is well defined.

Precautions.—If the specimen is taken from the mouth, remember that *S. pallida* is indistinguishable from *S. microdentium* by these methods; if from the glans penis or inner

surface of the prepuce, *S. gracilis* is usually present. Some of the fine varieties of this spirochæte are very apt to be misleading. When dead one cannot easily distinguish that they are apparently ribbon-shaped in transverse section as opposed to the round-bodied *pallida*. The size both of the spirochæte and its spirals must always be gauged by comparison with a red-blood cell, preferably in the same field.

(ii.) **Spirochæte stains.**—Giemsa's and Leishman's stains are those most commonly used for staining film preparations of spirochætes. It is well to remember that *S. pallida* stains more faintly than the other varieties of spirochætes. For demonstrating the flagella Loeffler's stain is usually employed.

(iii.) If a piece of tissue (preputial chancre, excised gland, &c.) is received for examination in 10 per cent. formalin solution it should be cut first into slices one-eighth of an inch in thickness and then stained by Levaditi's method. The *S. pallida* stand out very clearly in the subsequent sections, being stained a deep black. To obtain the best results it is better to allow the specimen to soak in the 1.5 per cent. silver-nitrate solution for at least a week rather than the three days usually recommended. Levaditi's pyridin method is much quicker, as the whole process can be completed within 24 hours, but the spirochætes do not show up so clearly.

In all of the above methods—ground stains, spirochæte stains, stained sections—we are examining the spirochætes when dead, and are therefore deprived of the most distinctive characteristic for differentiation—i.e., their movements. None of these methods is to be compared with the dark-ground illumination for simplicity, speed, and accuracy.

(iv.) **To examine specimen by the dark-ground illumination.**—Transfer the fluid obtained from chancre, gland puncture, mucous patch, cutaneous syphilide or suspected lesion in the mouth or pharynx, either direct with platinum loop or from capillary tube on to a clean cover-slip (No. 1 thickness) held in Cornet's forceps. If the specimen unavoidably contains much debris or blood it should be diluted with a drop of normal saline solution and diffused over cover-slip. This should now be gently lowered with the moist surface downwards on to the centre of a clean slide. It is a good plan to regulate the process with a metal spud, gradually withdrawing the same from beneath one edge of the cover-slip whilst the opposite edge rests upon the slide. If the slide is first moistened by passage through steam a more even contact is ensured and air-bubbles are avoided. The excess of fluid should now be expressed by applying firm pressure with a piece of filter-paper placed over the cover-slip. The object of this is to obtain as thin a layer of fluid for examination as possible, thereby ensuring the best definition under dark-ground illumination. If a greater depth of fluid is permitted currents will develop in same when the slide becomes warm—usually at different levels—rendering focussing difficult and the spirochætes have ample depth to dive in or out of focus. Even in a shallow preparation these currents will be troublesome should the cover-slip overlap the edge of the slide or, again, should any large air-spaces be present, which, of course, expand when temperature becomes raised. In using a dark-ground condenser of short focal length (this should be ascertained) slides should only be used the thickness of which comes within this margin. The Swift condenser is very useful for this work, having a focal length which will permit of the use of almost any ordinary slide, and by using a thin slide there is ample play for very delicate adjustment. The condenser should always be accurately centred. With the model just mentioned this is a very simple procedure. The condenser is first raised flush with the movable stage and with the two-thirds objective the two circles cut on the face of the condenser are focussed. By means of the two screws for this purpose the circles are centred. The condenser is now lowered and a drop of oil placed upon its upper surface. Oil is also placed on top of the cover-slip and corresponding under-surface of the slide, which is now placed upon the movable stage. The condenser is raised until its oiled surface makes contact with that of the slide; air-bubbles are thus avoided. The 1/12 inch objective is now gently lowered on to the oiled cover-slip and focussed and the reflector is further adjusted. The condenser should now be raised or lowered, as the case may be, until the maximum dark-ground effect is attained.

Regarding illumination I have nothing to add to the description furnished with the apparatus depicted in THE LANCET of Oct. 21st for this purpose. The commonest mistake made by the beginner is to focus the upper surface of the slide, not the moving particles in the fluid specimen. It is a wise plan first to focus a red blood corpuscle and then perfect the adjustment of reflector and dark-ground condenser.

In searching a field one must be constantly altering the fine adjustment, since it is very easy to miss a *S. pallida*,

¹ Article I. was published in THE LANCET of Dec. 2nd, 1916, p. 963.
² Guy's Hospital Gazette, December, 1911. "A Report upon the Use of Salvarsan in 50 Cases of Active Syphilis Treated as Out-patients."

though present, if it is not in the focal plane. I always make it a rule never to diagnose the case on the finding of but one *S. pallida*. If there is one there are bound to be more, and the finding of half a dozen typical *pallida* always eliminates the personal equation of error. In examining a specimen from a lesion of the fauces or buccal cavity this rule should never be broken, with this exception that one is at times fortunate enough to obtain a *S. pallida* and a *S. microdentium* in the same field and then the diagnosis by comparison is at once easy and devoid of error.

(c) *Differential Diagnosis in Spirochaetes.*

With regard to differential diagnosis in the spirochaetes met with in examining specimens in venereal diseases by dark-ground illumination, the following points should be observed:—

Size.—The standard for comparison for length should be the diameter of a red-blood corpuscle (7.5 μ), which can always be included in a specimen, red cells being, in fact, rarely absent.

Shape.—Does the spirochaete terminate abruptly at each end or does it fade away so that one cannot actually distinguish its termination? If the latter, one is often able to detect the existence of a flagellum by observing particles adherent to same—a blank space intervening. I have observed two *S. pallida* which have become entangled, still held together at the one pole by their flagella after their bodies were free. Is the body of the spirochaete uniform in width throughout? Does it appear to be flattened, ribbon-shaped, or is it round in transverse section? Note the irregularity of the spirals—i.e., would each third of the total length contain an equal number of spirals? Are the spirals "steep," rendering it difficult to focus the whole of the body, thereby producing the "string-of-beads" effect?

Movements.—Be certain that the movements are intrinsic and not merely produced by currents in the surrounding fluid. Are these continuous or intermittent, the spirochaete lying as though dead for some seconds, suddenly resuming vigorous movement? Note the flexibility, also rate of progression. Is there a definite "corkscrew" movement of rotation, always in the one direction, or can the spirochaete reverse same? Do not confuse this movement with a wriggling movement in one plane analogous to that of a snake through the grass. This latter *S. microdentium* frequently exhibits, but *S. pallida* never. Notice any special configuration, such as the formation of a loop at one end, or of a complete circle. A movement to be noted is a curious diving out of focus, as though the spirochaete were "standing on its head."

Refractivity.—Note if the rays are refracted in a pure white light, or whether they are broken up on the surface of the spirochaete, giving same a yellow tinge.

(i.) *S. balanitidis.*

This spirochaete is always present apart from any inflammatory process beneath a moist prepuce.

Size.—A small spirochaete rarely exceeding 5 μ in length (less than the diameter of a red-blood corpuscle). It is however, coarse in comparison to *S. pallida*, being nearly as broad as *S. refringens*.

Shape.—Usually possesses but two complete shallow curves, often one and a half. Its ends are blunt, having no flagella. One end usually thicker than the other. True focussing will reveal that it is apparently ribbon-shaped. In some lights it appears to have an undulating membrane.

Movements.—Very rapid in fresh specimen—almost dazzling; capable of rapid progression, which is chiefly produced by a wriggling along in one plane (snake-like).

Refractivity.—Very bright, but yellow tinge in faulty focus.

(ii.) *S. gracilis.*

This spirochaete is normally present beneath a moist prepuce. I have, however, found it in venereal sores on or about a dry glans penis. I have never detected it in specimens from gland punctures. This fact is important, since *gracilis* is the spirochaete that most resembles *S. pallida* in a genital chancre. It is usually removed from a lesion by careful cleansing, its habitat being in the superficial debris, not in the deeper layers. It is a hardy spirochaete, since I have seen it exhibit active movements after 30 days' confinement in a sealed capillary tube.

Size.—Length usually 6 to 8 μ and fairly constant. Breadth 0.5 μ (half that of *S. refringens*, twice that of *S. pallida*).

Shape.—It is a blunt-ended spirochaete, possessing regular curves, which are more rounded and not so steep as those of *S. pallida*. The terminal spirals are usually somewhat turned in on themselves. By slightly varying the focus one can quickly distinguish that it appears to be ribbon-shaped, exhibiting a broad surface alternating with a thin edge.

Refractivity.—When imperfectly focussed it will assume a yellow tint.

Movements.—Progression good compared with *S. pallida*, sometimes moving backwards and forwards in a straight line, pausing at the turn. Exhibits the "corkscrew" and also "concertina" movements. Is not so flexible as *S. pallida*.

(iii.) *S. refringens.*

This spirochaete, as its name implies, refracts the light in a dazzling manner. A coarse, blunt-ended spirochaete, with its few shallow irregular spirals, it suggests a resemblance to a miniature threadworm rather than a delicate spirochaete. It is present in many ulcerative or dirty papillomatous conditions, and is so readily distinguished that a detailed description here is unnecessary.

(iv.) *S. pallida.*

Size.—The variations in length are considerable, varying from 5 to 25 μ , but, as far as one is able to judge, the width seems to be constant, being placed at 0.25 μ . There is always a fairly wide range in the length of the individual *S. pallida* obtained from a common source, but one frequently observes that in the one case there may be a preponderance of very long spirochaetes, whilst from another the majority will be of the short variety. It is the most slender spirochaete met with outside the buccal cavity and the only type possessing flagella (excluding *S. pertenuis* of yaws—happily foreign to this country).

Shape.—The spirals are extremely regular and closely set, rendering the individual curves steep for their breadth. It is this depth of the curves that produces the "chain-of-beads" effect under the dark-ground illumination when the apex of each curve is focussed. How one can determine the presence of the flagella has been already described. Its body is not flattened from side to side.

Refractivity.—*S. pallida*, compared with the above spirochaetes, is very feebly refractile, and the rays deflected are of a purer white than those of any of the others—a cold, non-dazzling white, devoid of a halo of illumination extending to the surrounding medium.

Movements.—Progression very feeble, and provided there are no currents a *S. pallida* will remain within the field for hours. Its most vigorous movement is rotation upon its long axis (corkscrew). It is extraordinarily flexible, throwing itself into acute angular bends, hinge-like, always returning to the almost rigid straight. It may exhibit slight contraction and expansion in length. Waves pass from time to time from one extremity to the other. Often it will show a loop either at an extremity or towards the centre, persisting for some time. Another configuration is a complete circle, the two flagella becoming entwined. A characteristic movement is an abrupt dive out of focus—even in the shallowest of specimens—analogueous to that of a porpoise. Whilst perpendicular one can detect its presence by the disturbance of the surrounding particles. It seems incapable of freeing itself at all quickly after a collision.

(v.) *S. microdentium.*

This is the spirochaete common in dental caries and pockets and is frequently present in the exudate or slough from an ulcerative lesion in the mouth or fauces. Its importance in this work is solely due to its resemblance to *S. pallida*.

Features.—The length of this spirochaete rarely exceeds 6 μ . Its width is similar to *S. pallida* and its shape is identical, excepting that flagella cannot be detected. The refracted rays are not of such a pure white. Regarding movement, its progression is vigorous compared with *S. pallida*, which it attains chiefly by a gliding movement similar to a snake, not rotary. It is not so flexible, nor can it throw such angular bends as the above, and it does not resume its straight position as persistently.

(d) *Cerebro-spinal Fluid.*

The cell count and globulin estimation should always be done immediately. For the former Fuchs and Rosenthal's counting chamber is recommended by Harrison. For the latter the Nonne-Apel't saturated ammonium sulphate test is rapid and simple. The Wassermann reaction can be done at leisure.

(e) *Wassermann Test.*

It would be outside the object of these practical notes to discuss the technique of the Wassermann test with its many modifications.

LITERARY INTELLIGENCE.—Under the title of "Poverty and its Vicious Circles," Messrs. J. and A. Churchill are publishing a book by Dr. Jamieson B. Hurry, the author of "Vicious Circles in Disease."

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

W. D. Pearman, N. S. Nairne, J. T. Macnab, T. Grimson, and J. L. Lamond have been appointed temporary Surgeons.

ARMY MEDICAL SERVICE.

TERRITORIAL FORCE.

Lieut.-Col. H. G. Falkner to be Assistant Director of Medical Services, and is granted the temporary rank of Colonel whilst holding the appointment.

Lieut.-Col. R. R. Sleman, M.D., London Field Ambulance, to be Assistant Director of Medical Services, London Division, and to be temporary Colonel whilst so employed.

ROYAL ARMY MEDICAL CORPS.

Major W. Byam is restored to the establishment.

Majors (temp. Lieut.-Cols.) J. G. Bell, D.S.O., and J. D. Richmond relinquish their temporary rank on re-posting.

Major H. S. Peeke (Reserve of Officers) to be temporary Lieutenant-Colonel whilst serving with No. 1 British Red Cross (Duchess of Westminster's) Hospital.

Capt. (temp. Majors) T. J. Crean, V.C., D.S.O., and G. P. Taylor relinquish their temporary rank on re-posting.

Temp. Capt. John M. Macmillan, from Unattached List, to be temporary Captain.

To be Lieutenants: J. F. C. Braine, G. W. Heckels, and E. Butler, from University of London Contingent, Officers Training Corps.

Major L. S. Mackid, C.A.M.C., resigns his temporary commission.

Temporary Captains relinquishing their commissions: C. Yorke, F. G. Ralston, H. M. Rainsford, and I. R. MacLeod. A. D. Vernon-Taylor on account of ill-health.

Temporary Lieutenants relinquishing their commissions: W. F. Gibb and J. S. Taggart. H. E. Girdlestone on account of ill-health.

SPECIAL RESERVE OF OFFICERS.

To be Lieutenants: E. O. A. Singer (from Edinburgh University Contingent, Officers Training Corps), J. H. Vance, E. M. L. Morgan, T. P. Williams, and G. S. Wilson (from University of London Contingent, Officers Training Corps).

TERRITORIAL FORCE.

Eastern Mounted Brigade Field Ambulance: Lieut. E. H. Coyne to be Captain.

South Midland Mounted Brigade Field Ambulance: Lieut. O. Cook to be Captain.

Welsh Border Mounted Brigade Field Ambulance: Lieut. (temporary Capt.) D. P. H. Gardiner to be Captain.

London Field Ambulance: Lieut.-Col. R. R. Sleman is seconded whilst holding appointment as Assistant Director of Medical Services.

London Sanitary Company: Lieut. G. S. Elliston to be Captain.

Highland Mounted Brigade Field Ambulance: Lieut. G. W. Deeping to be Captain.

Lieut.-Col. and Hon. Surg.-Col. H. Colgate, from Attached to Units other than Medical Units, to be Lieutenant-Colonel.

Capt. C. C. Ling, from Attached to Units other than Medical Units, to be Captain.

INDIAN MEDICAL SERVICE.

The King has approved the promotion of the following officers:—

Captains to be Majors: H. C. Buckley, M. R. C. MacWatters, W. H. Hamilton, J. Cunningham, and H. Falk.

Lieutenants to be Captains: E. R. Armstrong, C. J. Stocker, Sahib Singh Sokhey, Atul Krishna Sinha, Subramanya Doraisamy, A. Seddon, J. Findlay, W. C. Spackman, Jyotish Chandra De, Nanalal Maganlal Mehta, R. M. Easton, C. H. P. Allen, and R. V. Martin.

The King has approved of the retirement of Lieut. V. P. Norman (on account of ill-health).

COLONIAL MEDICAL SERVICES.

West African Medical Staff.—The following deaths are reported: Mr. H. P. Lobb, provincial medical officer, Nigeria, Northern Provinces; and Mr. W. C. E. Bower, medical officer, Nigeria, Northern Provinces, who was killed in action while serving as temporary Lieutenant, R.A.M.C. Dr. J. A. Pickels, senior sanitary officer, Nigeria, Southern Provinces, has been appointed principal medical officer, Nigeria, Northern Province; and Mr. H. A. Foy, sanitary officer, Nigeria, Northern Provinces, senior sanitary officer, Nigeria, Southern Provinces. Mr. W. J. D. Inness, sanitary officer, Nigeria, has been transferred from Southern Provinces to Northern Provinces. Dr. G. J. Pirie, medical officer, Nigeria, Northern Provinces, has

been appointed sanitary officer, Nigeria, Southern Provinces; Dr. H. O'H. May, medical officer of health, Gold Coast, sanitary officer; and Dr. A. C. N. McHattie, medical officer, Nigeria, Northern Provinces, medical officer of health, Zanzibar. Mr. F. Manning, principal medical officer, Nigeria, Northern Provinces, has retired on pension. Dr. G. F. Daker, medical officer, Nigeria, Northern Provinces, has been re-employed, and Dr. H. G. F. Spurrell has been appointed temporary medical officer, Gold Coast. The following officers, whose services have been placed at the disposal of the Army Council, have been given temporary commissions in the Royal Army Medical Corps:—G. G. Butler, R. Sempie (Sierra Leone), H. O'H. May (Gold Coast), R. C. Macpherson, L. W. Davies, H. North, and W. E. Glover (Nigeria).

Other Colonial Services.—Dr. O. J. Murphy has been appointed assistant to the colonial surgeon, St. Helena.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The November issue of this journal opens with a joint paper by Temporary Captain Herbert Henry and Temporary Major T. R. Elliott, F.R.S., on the Morbid Anatomy of Wounds of the Thorax, detailing an investigation undertaken at the instigation of Colonel Sir John Rose Bradford, consulting physician to the British Expeditionary Force. Of 100 fatal gunshot wounds of the thorax seen at base hospitals in France 96 were caused by septic poisoning and four by hæmorrhage. Captain J. Gordon Thomson and Captain D. Thomson contribute a preliminary illustrated note on the Occurrence of Peculiar "Bodies" of Probably Protozoan Nature frequently Found in the Stools of Dysenteric Patients, and Lieutenant-Colonel C. J. Martin and Major W. G. D. Upjohn discuss the Distribution of Typhoid and Paratyphoid Infection among Enteric Fevers at Murdos from October to December, 1915. In a paper by Captain C. H. Treadgold on Serum Disease and Anaphylaxis the author arrives at the following, among other, conclusions: 1. "Accelerated reactions" are very far from being invariable, while "immediate reactions" are comparatively rare. 2. Dangerous sensitisation after the injection of horse serum is very seldom seen in the human subject. 3. While in anaphylaxis sensitisation and intoxication are effected by the unaltered antigen, the symptoms of serum disease are mostly due to the toxic action of the split products. 4. All these phenomena are due to a series of physical or physico-chemical changes, the nature of which is very imperfectly understood at the present time. Other articles of interest are: Arrangements for the Care of Cases of Nervous and Mental Shock coming from Overseas, by Temporary Lieutenant-Colonel W. A. Turner; and Continued Fevers of Obscure Origin among Soldiers of the British Forces in Greece, by Lieutenant-Colonel G. Chambers, C.A.M.C.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census 7247 births and 5128 deaths were registered during the week ended Saturday, Nov. 25th. The annual rate of mortality in these towns, which had been 12.6, 13.3, and 13.0 per 1000 in the three preceding weeks, rose in the week under notice to 15.4 per 1000 of their aggregate civil population estimated at 17,312,295 persons for the year 1915. During the first eight weeks of the current quarter the mean annual death-rate in these towns averaged 13.0 per 1000, and was equal to that recorded in London. Among the several towns the death-rate during the week ranged from 5.3 in Oxford, 8.4 in Ilford, 8.8 in Barrow-in-Furness, 9.1 in Ipswich, and 9.2 in Wallasey, to 20.4 in Merthyr Tydfil, 21.1 in Rotherham, 23.2 in Derby, 25.9 in Newport (Mon.), and 31.0 in Great Yarmouth.

The 5128 deaths from all causes were 820 above the number in the previous week, and included 210 which were referred to the principal epidemic diseases, against 250 and 241 in the two preceding weeks. Of these 210 deaths, 105 resulted from infantile diarrhoeal diseases, 45 from diphtheria, 29 from measles, 14 from whooping-cough, 11 from enteric fever, and 6 from scarlet fever, but not one from small-pox. The annual death-rate from these diseases was equal to 0.6, against 0.7 per 1000 in the previous week. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had steadily declined from 477 to 112 in the ten preceding weeks, further fell to 105, and included 26 in London, 10 in Liverpool, 7 in Birmingham, and 5 in Manchester. The deaths referred to diphtheria, which had been 39, 60, and 56 in the three preceding weeks, fell to 45, of which 9 were registered in London and 3 each in Coventry, Sheffield, Hull, and Cardiff. The fatal cases of measles, which had increased from 13 to 40 in the four preceding weeks, fell to 29, and included 12 in London and 6 in

Coventry. The deaths attributed to whooping-cough, which had been 20, 17, and 12 in the three preceding weeks, rose to 14, of which 3 occurred in Cardiff and 2 in Liverpool. The 11 deaths referred to enteric fever were equal to the number recorded in each of the two preceding weeks, and included 4 in London. The fatal cases of scarlet fever, which had been 12, 9, and 10 in the three preceding weeks, fell to 6, but showed no excess in any town.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 1141, 1171, and 1170 at the end of the three preceding weeks, fell to 1123 on Nov. 25th; 120 new cases were admitted during the week, against 146, 157, and 131 in the three preceding weeks. The cases of diphtheria again rose to 1584, against numbers increasing from 1262 to 1556 in the ten preceding weeks; 195 new cases were admitted during the week, against 186, 202, and 193 in the three preceding weeks. These hospitals also contained on Nov. 25th 109 cases of measles, 40 of enteric fever, and 40 of whooping-cough, but not one of small-pox. The 1307 deaths from all causes in London were 153 in excess of the number in the previous week, and corresponded to an annual death-rate of 15.8 per 1000. The deaths referred to diseases of the respiratory system, which had increased from 132 to 236 in the five preceding weeks, further rose to 294 in the week under notice.

Of the 5128 deaths from all causes in the 96 towns, 206 resulted from violence, 414 were the subject of coroners' inquests, and 1537 occurred in public institutions. The causes of 55, or 1.1 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Leeds, Bristol, Bradford, Newcastle-on-Tyne, Leicester, and in 66 other smaller towns. Of the 55 uncertified causes, 14 were registered in Birmingham, 4 in London, and 3 each in Liverpool, Rotherham, and South Shields.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year 955 births and 700 deaths were registered during the week ended Saturday, Nov. 25th. The annual rate of mortality, which had been 13.9, 14.5, and 13.9 per 1000 in the three preceding weeks, rose to 15.4 per 1000 in the week under notice. During the first eight weeks of the current quarter the mean annual death-rate in these towns averaged 14.0, against a corresponding rate of 13.0 per 1000 in the large English towns. Among the several towns the death-rate in the week ranged from 8.0 in Clydebank, 9.9 in Motherwell, and 11.2 in Kilmarnock, to 16.3 in Glasgow, 18.1 in Greenock, and 18.2 in Dundee.

The 700 deaths from all causes were 66 above the number in the previous week, and included 53 which were referred to the principal epidemic diseases, against 38 and 47 in the two preceding weeks. Of these 53 deaths, 20 resulted from measles, 18 from infantile diarrhoeal diseases, 9 from diphtheria, 3 from scarlet fever, 2 from enteric fever, and 1 from whooping-cough, but not one from small-pox. The annual death-rate from these diseases was equal to 1.2, against 0.6 per 1000 in the large English towns. The deaths attributed to measles, which had been 11, 8, and 9 in the three preceding weeks, rose to 20, and comprised 13 in Dundee, 6 in Glasgow, and 1 in Perth. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had been 18, 13, and 18 in the three preceding weeks, were again 18 in the week under notice, and included 7 in Glasgow, 4 in Edinburgh, and 2 in Coatbridge. The fatal cases of diphtheria, which had been 10, 5, and 8 in the three preceding weeks, numbered 9, and comprised 4 in Edinburgh, 2 each in Glasgow and Aberdeen, and 1 in Greenock. The 3 deaths attributed to scarlet fever were 2 below the average in the earlier weeks of the quarter, and included 2 in Glasgow and 1 in Coatbridge. The 2 fatal cases of enteric fever were registered in Glasgow and that of whooping-cough in Paisley.

The deaths referred to diseases of the respiratory system, which had increased from 74 to 118 in the five preceding weeks, further rose to 131 in the week under notice, but were 191 below the number registered in the corresponding week of last year. The deaths from violence numbered 27, against 37 and 38 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the registration area of Dublin 148 births and 153 deaths were registered during the week ended Saturday, Nov. 25th. The annual rate of mortality, which had been 15.9, 21.3, and 17.7 per 1000 in the three preceding weeks, rose to 20.1 in the week under notice, against corresponding rates of 15.8 and 16.3 per 1000 in London and Glasgow respectively.

The 153 deaths at all ages included 30 of infants under 1 year and 47 of persons aged 65 years and upwards.

Five deaths (of infants under 2 years) were referred to diarrhoea and enteritis. The causes of 12 deaths were uncertified, and those of 3 others were the subject of coroners' inquests, while 60, or 39 per cent., of the total deaths occurred in public institutions.

During the same period 165 births and 118 deaths were registered in the city of Belfast. The deaths corresponded to an annual rate of 15.8, or 1.8 per 1000 above that recorded in the previous week, and included 21 of infants under 1 year and 30 of persons aged 65 years and upwards. One death was referred to whooping-cough and 5 others (of infants under 2 years) to diarrhoea and enteritis. The causes of 5 deaths were uncertified, 8 inquests were held, and 29 of the total deaths occurred in public institutions.

Correspondence.

"Audi alteram partem."

"SPONTANEOUS BURNS."

To the Editor of THE LANCET.

SIR,—During the last sixteen months I have seen and treated four very interesting, and as far as my experience goes rare, cases of burns. All these burns, save one, were on the leg, just below the knee-joint. In the first case the burn was in the popliteal space, in the second between the fourth and fifth toes, the opposing skin surfaces showing two black wounds about one-quarter of an inch in diameter; the third case had the lesion over the tibialis anticus about one inch below the crest of the tibia, while in the fourth it was on the inner and posterior aspect of the limb.

On examining the breeches of the men affected nothing was visible on the outer surface of the cloth, but the inner surface revealed a black charred depression roughly circular in outline and about half an inch in diameter, the fibre of the cloth being burned and destroyed, presenting an appearance similar to that which one occasionally sees when the head of a phosphorus match has become ignited between layers of cloth, save that in the former case the burning process had been more persistent, extending over several hours, and had eroded the substance of the cloth to a greater extent, the more resistant fibres of the cloth being spared and forming a sort of open charred network over the depression. The surface of the underpants which had been in contact with the charred area above described was completely burned, and all one saw was a circular hole with black charred edges.

The opposing skin surface, however, presented a remarkable appearance—namely, a perfectly circular ebony-black mark, approximately half an inch in diameter, the circular periphery being the striking feature. On closer examination the lesion showed a clean-cut, punched-out edge, with a flat even floor, and when the glistening black covering, which could not be removed even with forceps, had disappeared, it was found that the destructive process had penetrated as far as muscle-tissue. In short, it looked as if the skin had been carefully and persistently cauterised with silver nitrate. In the first and third cases there was one wound only, while in the second and fourth there were two, one conforming to the usual half-inch diameter, the other, close beside it, about one-eighth of an inch in diameter.

The subjective symptoms, of which I have a personal knowledge, being myself the fourth case, are very slight. After walking about for a few hours one experiences a slight burning sensation, of which little notice is taken, and which is put down to chafing due to rather stiff breeches. As one expects, the chafed surface gradually becomes more painful, and at night-fall one is surprised to find upon examination the condition above described plus a little blood-staining. Within four or five days the black surface disappears and the wound heals slowly with but a slight serous discharge. The lesions in themselves are of little moment, but the results of the erosion may at first look alarming, as was the case in the third patient, whose first intimation that anything was wrong was the sudden onset of violent hæmorrhage, due to the erosion of a small vein. I was sent for hurriedly to attend a driver who was "bleeding profusely from a ruptured varicose vein," a diagnosis apt enough when one saw the blood-stained condition of the patient's breeches and blanket. Cases 1 and 3 were wearing breeches of the

ordinary khaki cloth, men's pattern; Case 4, men's pattern Bedford cord as supplied by ordnance to officers.

The question now remains: What is the cause of these peculiar circular burns? One naturally thinks of irritants, possibly the presence of some chemical used in dyeing or loading the cloth, and as all the cases have occurred during the summer months one asks, "Are heat and moisture required for the reaction?" In my case I had only worn the breeches for two days before the burns appeared, but during these two days I had done a considerable amount of heavy walking over the steep roads amongst the hills overlooking the Struma valley, one result of which activity was free and profuse perspiration. In Cases 1 and 3 the breeches had been worn probably for weeks before the condition described arose. The first case occurred in France during the earlier and cooler part of the summer (1916), the others in Macedonia, where the climatic conditions were at least semi-tropical.

In considering what may be the causative factors in such a condition one first thought that perhaps a match-head had filtered through a much-worn breeches' pocket and had become caught in one of the numerous creases behind the knee, and that pressure and friction while riding had caused the lesion, but the absence of any sudden painful sensation—the fact that no history of matches being carried in the breeches' pockets could be obtained—excluded this as a possible cause.

Major Henderson, D.S.O., the D.A.D.M.S. of the Division, threw out as a suggestion that particles of chloride of lime from latrine seats retained in the region of the knees may be a probable source of the injury, but in two cases (1 and 4) I can with certainty exclude chloride of lime. However, acting upon the suggestion, I put $1\frac{1}{2}$ gm. of chloride of lime in the knee of my breeches for six hours, during which time I made my usual tour of duty, walking and riding, with the result that I experienced the same burning sensation becoming more and more intense, but upon examination no burned surface was found, merely a slight inflammation extending half-way round the leg, with two or three very slight erosions of the skin where the irritation and friction had been more severe. What at first looked as if it might possibly be the commencement of charring, proved to be merely blood coagulum and could be dusted off with wool, a red chafed surface being left. The lime had no effect on the breeches; blood-stains were present, but there was no destruction of the cloth fibre. Sulphur I have also tried, but with no effect whatever. The head of a safety-match was also without effect.

The question of the causal agent of such a definitely demarcated ulcer with its black charred edge, its deep, rapid, and almost painless erosion should be of interest not only to medical men but to manufacturers of cloth, to whom the question of the chemical salts used in dyeing, loading, and "giving body to the cloth" is of so great importance. Two further cases have been reported in the division by Captain Hamilton, R.A.M.C. It would therefore be of interest to know if medical officers in other divisions had met with similar cases, and to have their ideas on the matter.

I am, Sir, yours faithfully,

MARTIN M. CRICKSHANK,
Captain, R.A.M.C.

Oct. 30th, 1916.

RHEUMATOID ARTHRITIS APPARENTLY CURED BY "AUTO"-COUNTER-IRRITATION.

To the Editor of THE LANCET.

SIR,—The treatment of chronic rheumatoid arthritis by counter-irritation and keeping open the ulcerated surfaces receives support from the following case.

A man, aged 45, with rheumatoid arthritis in very bad form for nine years—nearly every joint affected, only able to get about on crutches, considerable emaciation—came under my care two years ago. He improved considerably from the administration of arsenic, iron, strychnine, and iodides internally, good stimulating diet and fresh air, avoidance of all thermal-water treatment, and by residence in a high altitude. Six months ago he developed glandular swellings in the neck, one each side, about two and a half inches above the clavicle; they rapidly suppurated and assumed the dimensions of large walnuts. He refused to have them opened, and I then explained to him that as it was his wish to allow them to break it would be an opportunity for

treating the arthritis by counter-irritation in keeping the ulcerated surface open.

The patient accepted the suggested course of treatment; the abscesses, after discharging, broke down at their edges, about 2 square inches on each side remained for granulating. From the first no irritating measures seemed called for to keep the surfaces open, so that I advised him to keep them antiseptic with alternate applications of boric ointment and weak carbolic oil. They have not yet healed, but are doing so slowly, and, in a letter received from the patient on Nov. 3rd he says: "The abscesses are gradually going, the discharge is much less, and I have hope now that they are nearing the end of their journey. One marvellous thing is, of arthritis I have none."

Although the above counter-irritation (if such it was) was not carried out on the recommended surfaces contiguous to the spinal column, I think that the remarkable disappearance of the arthritis suggests at least the effect of a cause, the cause being obviously here (in view of the fact that all other treatment for arthritis was suspended) the ulcerated surfaces caused by the abscesses.

I am, Sir, yours faithfully,

Wimpole-street, W., Nov. 30th, 1916.

O. T. GRIFFITHS.

THE LIBRARY OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

To the Editor of THE LANCET.

SIR,—May I ask why the Council of the Royal College of Surgeons of England has decided to regulate the hours of the Library according to the Lighting Order? The readers, it is true, at present show a diminishing number, but these are likely to become fewer still by closing the Library in the afternoon at a time when those engaged in the earlier part of the day can only attend. The usefulness of the Library is being seriously curtailed by this policy, and to discourage the attendance of readers, by failing to meet a demand of the war, either on the grounds of economy or for any other reason, must, for example, deprive many officers of the Royal Army Medical Corps of the opportunity of profiting from the advantages the Library affords. This policy, the Council will excuse me for suggesting, seems scarcely to be a sapient example of official administration. To meet the disability of, not to evade, a war demand must surely, in this instance, be the proper course to pursue. The cost of a few blinds it cannot be supposed would involve a prohibitive outlay, while the justification of such an outlay must be apparent under the circumstances of the case.

I am, Sir, yours faithfully,

Wimpole-street, Nov. 23rd, 1916.

PERCY DUNN.

SCOPOLAMINE-MORPHINE IN LABOUR.

To the Editor of THE LANCET.

SIR,—A note upon two years' experience of the scopolamine-morphine method of inducing anaesthesia in childbirth may be of interest to your readers.

I have used it in 64 cases, out of which number 2 were unsuccessful as regards anaesthesia: one of these was a primipara, the other one had one child. Both were robust, well-built young women. Of the 62 cases in which the anaesthesia was perfect, 20 had some obstetric manipulation performed, and 18 of these had a final anaesthesia with chloroform lasting from 10 to 25 minutes. Two out of the 20 abnormal cases had the low application of forceps under scopolamine alone. In the 42 cases, the only anaesthetic being scopolamine, both the mother and child were well. I have had no post-partum haemorrhage and no stillbirths in normal confinements. In the whole record of 64 cases I have had one stillbirth: this in a primipara aged 40, delivered under chloroform, after over 48 hours under scopolamine, of a child weighing 12 lb. This was one of the worst confinements that I have attended. Afterwards she stated that she knew nothing about the whole period of labour from the first injection of scopolamine. In my practice I have had two stillbirths in cases in which chloroform was used only within the last two years.

As regards apnoea in the infant, I have had no trouble in any of the normal cases. In two abnormal cases there was difficulty with the infant, one of these a long tedious labour of over 12 hours' duration in which forceps were applied, the other a case of premature delivery at seven months. In this case I spent about half an hour before the child's

respiration was satisfactory. In the same nursing home about the same time an infant was born *at term* without scopolamine and without chloroform which required the same amount of attention.

I have come to the following conclusions: That in normal cases this method is a boon to the mother and harmless to the child. That in abnormal cases extending over many hours scopolamine-morphine is just as useful. That 1/6th grain of morphine sulphate with the first dose is enough for a normal case unless there is great restlessness. The nearer the end of the first stage of labour that the treatment is started the better the result. Owing to rigidity, chloroform is advisable in any operative interference.

The following case is typical of a normal confinement under scopolamine-morphine anaesthesia.

Mrs. —, aged 24, primipara, was given the first injection at 5.30 P.M., as on examination the cervix was dilating and she, in her own words, "was only just beginning to realise actual pain." Previous to this she had been walking about and waiting for the labour to start. At 6.30 P.M. another injection of scopolamine was given. She began to doze about 20 minutes after the first injection, and was perfectly peaceful until after five hours, she woke up and, again to quote her words, "felt quite refreshed, and found that baby had been born two hours before, quite healthy and normal."

She was quite quiet and felt no pain from beginning to end.

I am, Sir, yours faithfully,
Gillingham, Kent, Nov. 23rd, 1916. IAN JEFFERISS.

THE ANGLE OF THE DROPPING PIPETTE AND A METHOD OF DROP-MEASURING LIQUIDS.

To the Editor of THE LANCET.

SIR,—In your issue of Nov. 18th Captain R. P. Garrow, R.A.M.C., has, on the angle of the dropping pipette, an excellent and timely article advocating a reasonable degree of live intelligence on the part of workers in using drop-measuring, as was advocated also by Dr. P. Fildes and Dr. J. McIntosh in a recent article on A Method of Applying the Wassermann Reaction in Large Numbers, in THE LANCET of Oct. 28th.

The phenomenon of a simply drawn pipette of suitable gauged size rhythmically yielding equal drops of desired volume is one of the most remarkable quiet small phenomena in nature. Few and simple as are the "rules" for guiding this gentle force thus harnessed, those rules must be known and followed.

An attempt was made to set forth the principles and some applications of drop-measuring in two articles recently published by me in THE LANCET of Dec. 4th, 1915, and Sept. 2nd, 1916. The space was all too small, and I have not yet seen occasion to modify, except in the way of expansion, any of my statements. Among the 90 paragraphs of my two articles one was devoted to the angle of the pipette. The practical rule that the pipette should be "held vertical, or nearly so," was thus given, and was explained by pointing out that the drop-size increases with the circle or oval of contact, that the long axis of the oval increases roughly as the secant of the angle of declination from the vertical, and that the secant increases in the first 8° at only one-sixteenth of the rate at which it increases in the sixth 8°. I did not pursue the matter beyond 45° from the vertical position; indeed, in the second 45° the resultant of the various forces in play is widely different according to the size of the pipette concerned. Thus, with Captain Garrow's pipette the drop from the horizontal nozzle has twice the volume of the drop from the vertical nozzle. But with a pipette 1/3 mm. in outer diameter, freshly drawn by me, the "horizontal drop" is three times the volume of the "vertical drop." This further emphasises the rule, as Captain Garrow puts it: "The only correct position in which to hold a dropping pipette is the vertical position."

I am, Sir, yours faithfully.

R. DONALD.

Bacteriological Laboratory, London Hospital Medical College,
Nov. 24th, 1916.

THE King has sanctioned the following appointments to the Order of the Hospital of St. John of Jerusalem in England:—As Knights of Grace: Colonel S. M. Smith, A.M.S., and Surgeon-General R. W. Ford, C.B., D.S.O.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Wounded.

Capt. C. O. Donovan, R.A.M.C., attached Loyal North Lancs. Regiment.
Capt. R. Farrant, R.A.M.C.
Lieut.-Col. N. C. Rutherford, R.A.M.C.
Capt. A. G. Wilson, R.A.M.C.
Surgeon-Major F. W. Bailey, Royal Field Artillery.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Lieut. L. Fitzmaurice, Somerset Light Infantry, fifth son of Dr. R. Fitzmaurice, of Littlehampton, and late of Lindfield, Sussex.
Second Lieut. A. A. Smith, Loyal North Lancs. Regiment, younger son of Dr. A. Smith, J.P., of Camberwell.
Capt. W. G. Barker, Connaught Rangers, only surviving son of the late Col. A. Barker, Army Medical Service, of Harley-street, London.

MENTIONED IN DESPATCHES.

In a despatch received from General Sir Archibald Murray, K.C.B., Commander-in-Chief of the Egyptian Expeditionary Force, dated Oct. 1st, and dealing with the operations in Egypt from June 1st to Sept. 30th, the names of the following medical officers are mentioned:—

Staff, &c.—Col. (temp. Surg.-Gen.) J. Maher, C.B., A.M.S.; Major (temp. Lieut.-Col.) P. S. Lelean, C.B., R.A.M.C.; Major (temp. Lieut.-Col.) C. J. Martin, Australian A.M.C.; Temp. Capt. A. S. M. Macgregor, R.A.M.C.

Army Medical Service and Royal Army Medical Corps.—Temp. Lieut.-Col. H. L. Eason; Local Lieut.-Col. L. P. Phillips; Temp. Lieut.-Col. J. W. Barrett, C.M.G.; Major (temp. Lieut.-Col.) E. McDonnell; Capt. R. B. Campion (Spec. Res.); Temp. Capt. T. D. Kennedy; Temp. Lieut. M. Sommerville; Temp. Capt. G. Wight; Lieut.-Col. W. Howorth; Capt. (temp. Lieut.-Col.) J. W. Mackenzie; Capt. C. C. Fitzgerald, M.C.; Capt. A. H. Norris; Capt. N. H. Haskins; Capt. A. B. Sloan; Capt. R. S. Taylor; Capt. F. J. Green; Capt. J. H. Wood; Capt. D. Dickie; Capt. (temp. Major) A. H. Horsfall, D.S.O.

Australian and New Zealand Forces.—Lieut.-Col. (temp. Col.) R. M. Downes, A.A.M.C.; Major W. Stansfield, A.A.M.C.; Capt. P. Dunningham, A.A.M.C.; Lieut.-Col. G. P. Dixon, A.A.M.C.; Lieut.-Col. D. G. Croll, A.A.M.C.; Major E. R. White, A.A.M.C.; Capt. B. D. Gibson, A.A.M.C.; Capt. D. D. Jamieson, M.C., A.A.M.C.; Capt. G. H. Vernon, A.A.M.C.; Capt. G. H. Wood, N.Z.M.C. (died of wounds); Capt. R. G. S. Orbell, M.C.

Indian Army.—Col. W. H. B. Robinson, C.B., I.M.S.; Major H. B. Drake, I.M.S.; 1st Class Sub-Assst.-Surg. Muhammad Zaki.

THE EYE RISKS OF MUNITION WORK.

It might be expected *a priori* that the great extension of munition work would have entailed an increased incidence of injuries to the external eye. That this is not necessarily the case is shown by the letter of a surgeon to an eye infirmary serving a great industrial district, quoted in the most recent memorandum of the Health of Munition Workers' Committee (Cd 8409. Price 1d.). The total number of out-patients had not been sensibly greater in 1915 than 1913, and the 10 per cent. increase in cases of impacted foreign bodies was attributed by the surgeon to the growing preference of the worker for their removal by a skilled hand rather than by a fellow-worker. The Memorandum states that the avoidance of eye accidents in munition works is in large measure a matter of reasonable precaution. The majority of injuries are due to metallic particles shot off from the lathe against which the wearing of goggles is a sufficient protection. Two forms of eye guard have been designed by the Committee to meet the needs of workers, both of which provide for ventilation and easy replacement of the glasses. The misdirected efforts of fellow-workers to remove foreign bodies—the only fruitful source of sepsis—are to be replaced by the attention of the factory nurse, who should have had (the Memorandum states) some ophthalmic training. First-aid by fellow-workers should be confined to the use of eye-drops with or without a pad and bandage.

OBITUARY OF THE WAR.

IAN MACDONALD BROWN, M.A. CAMB., M.R.C.S. ENG.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain I. M. Brown, who was killed in action on Nov. 15th, aged 28 years, was the younger son of Dr. Macdonald Brown, of 64, Upper Berkeley-street, London, W. He was educated at St. Paul's School and Downing College, Cambridge, taking the Natural Science Tripos in 1910 and



his M.A. degree four years later. After a year at the University of Edinburgh he completed his medical studies at the London Hospital, taking the Conjoint diploma in 1914. Before going up for the final M.B. Camb. war was declared, and he at once volunteered his services, obtaining a commission in the R.A.M.C. After spending a period of service at Aldershot he was sent out to Gallipoli in June, 1915, and was invalided home two months later. He then

held various posts in the Southern Command until he was sent out again, this time to France, attached first to a New Zealand Division and later to a brigade of artillery. It was while attending to the wounded under fire that he was killed. Many letters have been received by Captain Macdonald Brown's relatives from the officers and men with whom he was for long in intimate contact, all alluding to their personal loss. He leaves behind him a widow and an infant son.

JAMES DAVID FORRESTER, M.B., CH.B. EDIN.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. D. Forrester, who was killed in action on Nov. 13th at the age of 28, was elder son of Provost James Forrester, of Peebles. He was educated at Peebles County High School and George Watson's Boys' College, Edinburgh, continuing his medical studies at the University and graduating in 1912.



After a voyage to India as ship's surgeon and resident appointments at Rochdale and Halifax, he volunteered for service on the outbreak of war and after obtaining his commission was for a time at Aldershot before being given charge of the advanced dressing station of a field ambulance attached to the Royal Naval Division. With this he was serving

at the time of his death. Captain Forrester was of a solid persevering nature which would have carried him far, and this was combined, as his friends testify, with a consideration for others which lightened the lot of his associates. He stuck close to his work, but found time to play with the Northern Hockey Club and to captain a municipal tennis club. He was lately married to Elizabeth, daughter of William Steel, of Lockerbie, and leaves an infant daughter.

THE MOBILISATION OF THE MEDICAL PROFESSION.

We quoted in THE LANCET last week Sir Donald MacAlister's words to the General Medical Council from the presidential chair, in which he said that he had received a letter from the War Office stating that that Office would gladly engage 400 medical practitioners to-morrow if they were forthcoming. We gave particular publicity to the words, because they were calculated to prepare the medical profession for a movement which may shortly take place for a call upon all persons whose names are to be found upon the Medical Register for assistance to the best of their capacity during the continuation of the war. While we have every reason to believe that the Central Medical War Committee and the Scottish Medical Service Emergency Committee have been able to supply the needs of the Navy and Army in the matter of medical officers up to this time, and while, indeed, there is no evidence that these two bodies will not be able still to play the same valuable part for a considerable period, it is clear that there must come a day, if the war is indefinitely prolonged, when the necessary economy of medical men can only be attained by the mobilisation of the whole of the available supply, so that calls can be made upon individual services as, where, and when required by circumstances. It has long been felt that some such step—a step to which, for convenience, the word "mobilisation" is applied—might have to be taken, and a strongly expressed view to this effect has reached us from Scotland. We believe that the general opinion of the medical profession, judging by the correspondence that comes to us, is in a similar direction. As yet the civilian population has not suffered in any marked way from depletion of medical men, but the distribution of the medical men remaining in civilian practice has been the subject of much criticism, some localities appearing to maintain more practitioners than can be necessary, having regard to their populations, while others must be content with the minimum of professional attention. In this connexion the part played by pecuniary engagements and liabilities in determining decisions cannot possibly be ignored, and the sacrifice that has to be made in the keeping of enrolment pledges is very much greater in the case of some medical men than in the case of others. But the members of the medical profession are the only people who can do medical work, and volunteers from outside cannot be taught our science in a few weeks as they can be taught a branch of some technical industry. The medical man is the product of long training which cannot be dispensed with, and therefore those medical men whom the country possess should be used in the most economical way. This is the fact which seems to us to mean that some form of general mobilisation is advisable, which, by treating all our highly specialised class as one family, should ensure that only the real need of each area is served, and that where such need is more than met the surplus energies can be directed to other spheres. The demands made upon medical men in this way would necessarily be very heavy, but the burden would be distributed upon us all. Moreover, the medical profession as a whole, those already in the ranks of the Navy or Army and those without, would establish the right to ask that their corporate strength should be as carefully husbanded in the ranks of the services as in the civilian areas.

ACCUMULATED FATIGUE IN WARFARE.

The second interim report of the British Association Committee, of which Professor J. H. Muirhead is chairman, to investigate fatigue from the economic standpoint has now been printed and contains a deeply interesting section by Dr. T. G. Maitland on Accumulated Fatigue in Warfare. The present war has, alas, provided unlimited material for the study of fatigue in soldiers at the front, and the cases differ from those of fatigue among civilians in being of greater severity and, in the nature of things, not susceptible to experiment. Military necessity has in the past often prevented the Army from getting the greatest possible value out of each of its units; it was found that the breakdown resulting from long-continued trench strain, while soon recovered from after a period of rest, left the quality of the soldier's work on his return to activity impaired; his

aim was less good, his decision less prompt. Dr. Maitland states that the hope of obtaining an ideal working day for each unit is incapable of realisation, as the actual strain in the field varies with the occasion, and depends on such mutable factors as sleep, food, noise, and nervous strain. Happily, with the present greater ability to supply reinforcements strain can be diminished as well as the actual fighting units more often replaced, and in this way an opportunity is given for what Dr. Maitland calls a "growing delicacy of perception in the anticipation of the breaking-point." From a military standpoint the most important item is the large class of combatants who do not collapse in the field but return from the lines with extreme pallor, a low blood pressure, and a *faiblesse irritable* shown by the restlessness of hands and feet. In these cases fatigue has gone slightly beyond the possibility of sound physiological recuperation. To reduce the incidence of such cases, which are a genuine encumbrance, the hours in the fighting line have lately been diminished. The ultimate sequel of such long-continued fighting strain has been seen by Dr. Maitland in Serbian soldiers who have lived through six years of nearly continuous Balkan war and many of whom show marked arterio-sclerosis. He was able in most cases to exclude the action of mineral poisons, alcohol, and acute specific toxins, and to establish the production of fibrosis in the arteries from hard work alone. The whole of this interim report teems with matter of urgent and practical interest and further instalments will be welcomed.

AMERICAN MEDICAL EXPERIENCES AT THE WAR.

Medical Director H. G. Beyer, who would be styled in a British Navy List Deputy Surgeon-General, has recently told how he was at the outbreak of war working in a laboratory in Berlin. He volunteered at once for Red Cross work and was detailed to the Red Cross Auxiliary Naval Hospital, of 3000 beds, established at Hamburg in the Emigrants' Waiting Place of the Hamburg-American Line. Here he had 64 colleagues, all, he says, inspired with a splendid comradeship and devotion to duty. Dr. Beyer was specially attached as assistant to Professor E. Lexer, and while admiring all the work done he was particularly impressed by the very satisfactory results of the transplanting operations, preventing crippledom and deformity. Further, the silence and the accurate work of the sick transport corps greatly impressed the reporter. He saw 200 wounded removed in 20 minutes at midnight from a hospital train to the waiting motor ambulances "without noise, without audible words of command being given." The same machine-like silent efficiency characterised those who removed patients from hospital ships.

Major W. A. Jolley, of the National Guard of Colorado, has described in the *Military Surgeon* his work at Belgrade under the American Red Cross in the Serbian National Military Hospital, where he took the place of Dr. Magruder, who had died from typhus. In his article, which is excellently illustrated, he notes that improvised hospitals in war time should be located with particular reference to their safety during possible fighting, and observes that the Austrians were very careful during the bombardment to spare his hospital in its conspicuous position with its large Red Cross flag. He thinks that large hospitals should have short tracks laid into them from some near-by railway to facilitate the transport of sick, to save labour, and to prevent congestion of the railway stations, evidently relying upon the immunity from attack which his hospital enjoyed, but which has not been common. Much of Dr. Jolley's experience was that of other hospital workers in Serbia, and has therefore been the subject of many books, papers, and addresses in this country, but we do not remember to have seen one piece of information before. He says that most of the sanitary equipment of Serbia was material captured from the Austrians in their retreat. When the Austrians had been in Belgrade for a month they permitted the American party to go home, having been on terms with the Austrians which have not been reported by some other medical and sanitary workers in the war.

A doctor who has recently returned from Austria, where he has been acting as captain in the Austrian Army Medical Corps, gave an address recently in Philadelphia, in which he stated that in spite of the general military preparedness of Germany, they were woefully lacking as regards trained

nurses, orderlies, facilities for transportation of the sick, supplies, and other essentials of the sanitary service. Dr. Harvey Cushing, of Boston, Mass., who has been working with the American Ambulance in Paris, has discussed in a full and valuable way the management of cerebral wounds. These, except some tangential longitudinal sinus injuries, which recover spontaneously, and the inaccessible fractures of the base, all require surgical intervention, and Dr. Cushing decides that, except in cases of severe primary hæmorrhage, it is better to send the wounded man to the base hospital. He may not reach it within a couple of days, and thus 1 per cent. may be lost, but 10 to 20 per cent. will be saved, for the brain is notably tolerant to contusions and infections, while even apparently trivial scalp wounds may require for their thorough treatment prolonged neurological study, detailed X ray examination, carefully planned operation under skilful anaesthesia, and perhaps other appliances, such as an electro-magnet. None of these are available at the very front.

RECENT RED CROSS WORK IN DEVONSHIRE.—

The War Office has accepted the offer of the residents of Great Torrington (Devon) to equip the residence "Enderley" as a military hospital for 50 patients. The Mayor of Lyme Regis (Dorset) has offered Rhode Hill House, Uplyme (Devon), as a military hospital; there is accommodation for 90 cases, but at the outset it is proposed to receive 50 patients. Peak House, Sidmouth (Devon) has been opened as a Red Cross Hospital and accommodates 50 patients. The commandant is Mr. R. D. Stokes and the medical officer Dr. A. Robin.

"THE CRIMES OF GERMANY."—The illustrated special supplement of the *Field*, noticed in THE LANCET of Jan. 29th, devoted to the violations of international law and humanity by the armed forces of the German Empire, has been revised and brought up to date and is now being issued at the price of 1s., which will ensure a large circulation for this terrible indictment. The re-issue is made in the public interest and the publishers derive no gain from it.

An Army Order issued this week equalises for the purpose of pension or gratuity injuries received by officers in the performance of their military duties although not acquired in action. Evidence must be forthcoming in each case of special risk due to war conditions, and that reasonable precautions had not been neglected.

Obituary.

WILLIAM PAUL SWAIN, F.R.C.S. ENG.,

CONSULTING SURGEON TO THE SOUTH DEVON AND EAST CORNWALL HOSPITAL.

THE death has occurred in his 83rd year at his home in Plymouth of Mr. William Paul Swain, F.R.C.S. Eng. Mr. W. P. Swain was son of the late Mr. P. W. Swain, F.R.C.S., J.P., in his time also a well-known surgeon at Plymouth. After studying at King's College, London, where he later became an honorary Fellow, and holding resident appointments at King's College Hospital, he joined his father at Plymouth in a large surgical practice. His first hospital appointment was on the honorary staff of the Royal Albert Hospital, Devonport, from which he resigned on his election as assistant surgeon to the South Devon Hospital, to which he remained attached all his life. His surgical writings attained a wide publicity. He was awarded the Jacksonian prize in 1865 for an essay on Diseased Conditions of the Knee-Joint, and his handbook on "Surgical Emergencies for the Use of General Practitioners" ran rapidly through five editions and went all over the world. He was also a frequent contributor to these columns on points of surgical technique. Outside his purely surgical work he was active in improving the sanitary conditions of the Three Towns, being at one time chairman of the Sanitary Committee of the Council, of which he had been a member for 18 years. Mr. Swain had held a commission in the 3rd Devon Volunteers and was a first-rate shot; he was also the possessor of a medal for service in the previous Serbo-Bulgarian War. His loss will be widely felt in Plymouth, where he has left a widow and daughter.

Medical News.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee held on Nov. 14th, 35 cases were considered and £303 voted to 29 of the applicants. The following is a summary of the cases relieved:—

Wife, aged 53, of M.R.C.S. Eng. who practised until recently at Tunbridge Wells. Her husband a few months ago had a paralytic seizure which has left him helpless. His practice, which produced between £500 and £600 a year, has now been sold, and he is to receive one-third of the proceeds for three years, and as the practice was more or less a personal one less than £100 a year is expected. There are 11 children, seven of whom are at home and four going to school, and elder ones only able to help very slightly. Voted £2 last month and referred to the Guild. Voted £10.—Daughter, aged 54, of M.R.C.S. Eng. who practised at Haddington. Applicant was a governess for 33 years, but owing to a breakdown in health had to discontinue the work. Income £18 from dividends and £21 pension from another society, and earns a little by needlework. Owing to high price of food unable to manage at present. Voted £2 last month and referred to the Guild. Voted £12 in 12 instalments.—Daughter, aged 47, of M.R.C.S. Eng. who practised at Streatham and died in 1914. Applicant suffers from abdominal trouble and only able to do a little painting, for which there is no sale at present. Only income £17 per year. Her mother has help from the Fund. Relieved twice. £10. Postponed last month for further inquiries. Voted £5.—M.R.C.S. Eng. aged 47, married, who practised at Birmingham, suffering from disseminated sclerosis. Until recently was able to earn a bare living by acting as ship's surgeon, but now too ill to undertake work of any kind. One son, aged 9, and wants help towards his education. Voted £18 in 12 instalments.—Widow, aged 35, of L.R.C.P. Edin. who practised at Edinburgh and died in May, 1916. The deceased had developed quite a good practice, and had invested most of his savings (£3000) in the purchase of a house. After his death this was let, the net proceeds being £50. In addition to this, other income £40. Four children, ages 10 to 2 years. Voted £12 in 12 instalments.—Widow, aged 63, of M.R.C.S. Eng. who practised in Suffolk and Cambridge and died in 1904. Left quite unprovided for, and until recently earned a bare income by acting as nurse-companion. About four months ago became ill, and is now suffering from paralysis, and the small amount of money saved is almost exhausted. Voted £2 and referred to the Guild.—Widow, aged 70, of L.R.C.P. Edin. who practised at Cardiff and died in 1906. Was left totally unprovided for, and is now a chronic invalid. Only income two pensions from other societies of £54. Two children married, and unable to help. Relieved 11 times, £82 10s. Voted £6 in 12 instalments.—Widow, aged 79, of L.S.A. Lond. who practised in Suffolk and died in 1878. Left unprovided for with a large family, none able to help. One daughter assists in the home. Only income a pension of £30 from Epsom College. Relieved four times, £22. Voted £12 in 12 instalments.—Daughter, aged 83, of M.R.C.S. Eng. who practised at Newton Abbot and died in 1839. Was a governess for many years. Income from two annuities, £70. Was an annuitant of the Fund for many years, but this was discontinued. Relieved last year, £20 in four instalments. Voted £8 in two instalments.—Daughter, aged 66, of M.D. Edin. who practised at Spalding and died in 1896. Applicant was left with insufficient means, and now too old to get employment. Only income £34 per annum. Relieved once, £12. Voted £12 in 12 instalments.—Widow, aged 59, of M.D. Glasg. who practised in Perthshire and died in 1907. Was left unprovided for, and is now practically blind. Son, who used to help to keep the home, now in the Army. Two other sons married and unable to help. Relieved twice, £12. Glasgow branch of the Guild strongly recommends this case. Voted £10.—Widow, aged 79, of M.D. Lond. who practised in Wimpole-street and died in 1896. Applicant was left with very slender means, total only £44. Suffers from rheumatic gout. Relieved nine times, £56. Voted £10 in two instalments.—Widow, aged 78, of M.R.C.S. Eng. who practised at Holderness and died in 1896. Left with a large family and only £30 per annum. With the exception of two daughters who help at home, the other children are married and unable to help. Tries to supplement income by taking in lodgers. Relieved six times, £72. Voted £12 in 12 instalments.—Daughter, aged 76, of M.D. Erlangen who practised at Leominster. Applicant was left without means and was a chronic invalid, and is now a resident in a home for incurables. Relieved 14 times, £121. Voted £6 in 12 instalments.—Daughter, aged 64, of M.D. Lond. who practised in London and died in 1887. Applicant is blind, and her only income is a pension from a Society for the Blind. Relieved four times, £42. Voted £12 in 12 instalments.—Daughter, aged 65, of F.R.C.S. Eng. who practised at Chester and died in 1884. Applicant left without means, and has endeavoured to earn a living as house-keeper, but owing to age cannot obtain a post. Relieved five times, £32. Voted £10 in two instalments.—Widow, aged 46, of L.R.C.P. Edin. who practised in Fifeshire and died in 1913. Applicant was left without means with six children, two of whom are still at school, and the only one able to help earns £75 per year, which is the family's only source of income. Applicant has recently been very ill, and with the increased cost of living has got into difficulties. Relieved once, three years ago, £10. Voted £20.—Daughter, aged 64, of M.R.C.S. Eng. who practised at Bexley Heath and died in 1886. Left without means and always an invalid. Receives a little help from a friend and earns a few pounds yearly by needlework. Relieved 12 times, jointly with a sister (recently deceased), £194. Voted £18 in 12 instalments.—Daughters, ages 64 and 56, of M.R.C.S. Eng. who practised in Cornwall and died in 1873. Only property left them the house in which they live, and they try to make a living by receiving paying guests, but recently not successfully. Relieved seven times, £118. Voted £18 in 12 instalments.—Daughter, aged 57, of M.R.C.S. Eng. who practised in Liverpool and died in 1893. Applicant lives with two sisters and one brother, none of whom are able to earn much, and all are very delicate. An uncle pays the rent. Relieved seven times, £80. Voted £12 in 12 instalments.—Widow, aged 58, of L.R.C.P. Edin. who practised at Langley and died in 1909. Applicant endeavours to make a

living by taking in paying guests, but cannot get sufficient to make it pay. Lives in own house, but it is heavily mortgaged. Relieved six times, £60. Voted £10 in two instalments.—Widow, aged 61, of M.D. Glasg. who practised at Birkenhead and died in 1895. Was left quite unprovided for with three daughters, and one a chronic invalid. Applicant suffers from neuritis. Endeavours to supplement the income earned by the two daughters by taking in lodgers, but owing to the high cost of food unable to manage. Relieved seven times, £102. Voted £6 in 12 instalments.—Widow, aged 53, of M.D. Edin. who practised at Newcastle and died in 1886. Applicant was left entirely without means with one young daughter. Up to about two years ago, when she fractured her leg, managed to make a living as nurse-companion, but cannot undertake any work now, and is dependent on her daughter, now married and only able to help a little. Relieved twice, £24. Voted £12 in 12 instalments.—Widow, aged 86, of M.R.C.S. Eng. who practised at Great Marlow and died in 1891. Left with three daughters, ages 49, 52, and 55, two of whom are deaf and dumb. Only certain income £56. One daughter earns a little as a clerk. Relieved nine times, £68. Voted £24 in 12 instalments.—Daughter, aged 57, of M.D. Lond. who practised at St. Pancras and died in 1868. Applicant and her mother were left entirely unprovided for, and since her mother's death earned her own living as nurse-companion, but owing to ill-health and age unable to obtain a suitable work. Voted £6 in six instalments.—Widow, aged 66, of L.R.C.P. Edin. who practised in Essex and died in 1896. Since the death of her husband has earned a living by acting as cook. Recently had a serious operation, which prevents her from working. Only income a small pension from another society. Relieved five times, £42. Voted £12 in 12 instalments.—Widow, aged 67, of L.R.C.P. Edin. who practised at Port Carlisle and died in 1893. Husband died insolvent and left applicant with five children, only one of whom is able to help. Earns a little by taking in lodgers. Relieved three times, £36. Voted £12 in 12 instalments.—Daughter, aged 48, of M.R.C.S. Eng. who practised in Bombay and died in 1873. Applicant endeavours to earn a living by nursing, but finds it impossible to make sufficient to keep herself. Relieved five times, £64. Voted £12 in 12 instalments.

It was reported that four annuitants had died since the previous meeting, one of whom had received £500 and another £480. The vacancies were filled up. Subscriptions may be sent to the honorary treasurer, Dr. Samuel West, at 11, Chandos-street, Cavendish-square, London, W.

ROYAL SURGICAL AID SOCIETY.—The fifty-fourth annual meeting of this society was held at the Mansion House on Dec. 6th, under the presidency of the Lord Mayor, Sir William Dunn. The report was adopted, the Lord Mayor personally testifying to the good work done among the poor by the society. He added that the Prince of Wales had become a supporter of the society.

IRISH NURSES AND THE COLLEGE OF NURSING, LIMITED.—An Irish correspondent writes: "The chief objection taken by Irish nurses to the new College of Nursing, Limited, is professional rather than national, and rests on the fact that membership of the College is open not merely to trained nurses but to those practising any branch of nursing, such as mental nursing or massage, and that the latter are to have equal voice with fully trained members in the government of the College."

THE MENTAL AFTER-CARE ASSOCIATION.—The Mental After-Care Association for poor persons, convalescent or recovered, from institutions for the insane earnestly appeals for funds to carry on and extend its work. The association, which is the only one of its kind in the United Kingdom, assists cases in all parts of the country in various ways, and more than 30 per cent. more applications have been received during the current year than in 1915. Secretary, Miss E. D. Vickers, Church House, Westminster.

THE L.M.S.S.A. EXAMINATION.—An action was recently brought by an unsuccessful candidate for the Final Examination of the L.M.S.S.A. against the Master and Wardens of the Society of Apothecaries, alleging that he had not had a fair examination, and demanding the return of his fees. Judge Rentoul, in giving judgment for the defendants, described the allegation as preposterous, and said that no examination could have been better or more fairly carried out.

TUBERCULOSIS AFTER-CARE: CAMBRIDGESHIRE ASSOCIATION.—The formation of a Tuberculosis After-care Association for the administrative county of Cambridge was decided on at a meeting held at Cambridge on Nov. 18th and attended by representative members of the medical profession, Insurance Committee, Friendly Societies, and others interested in philanthropic work. The decision was the ultimate outcome of a paper read in August, 1915, by Mr. P. C. Varrier-Jones, acting tuberculosis officer for the county of Cambridge, at the Friendly Societies Council. Mr. F. Bunnett stated that the Ancient Order of Foresters had altered their rules so as to admit of sick-pay being paid to persons suffering from tuberculosis if they were doing work prescribed as part of their treatment. Sir Clifford Allbutt, who presided, spoke of the scheme as a very important move in the direction of what many thought was the radical need—to stop infection.

Sir James Mackenzie has withdrawn from the central Medical Appeal Board.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Reconstruction of the Government.

Mr. ASQUITH announced on Monday, Dec. 4th, that the King had approved of the reconstruction of the Government. Mr. BONAR LAW having intimated to His Majesty his inability to form an administration, Mr. LLOYD GEORGE has undertaken the task with the coöperation of Mr. BONAR LAW.

Ministry of Pensions Bill.

The Ministry of Pensions Bill has been read a third time in the House of Commons.

Food Control.

No official intimation of the appointment of a Food Controller has yet been made, but an Order of the Board of Trade has been issued this week limiting the number of courses to meals served in public places. A further Order prohibiting the eating of meat on certain days is foreshadowed.

Central Midwives Board.

The report on the work of the Central Midwives Board for the year ended March 31st, 1916, has been presented to Parliament. It states that on that date the Midwives Roll contained the names of 40,513 women, an increase for the year of 1644 on the total number appearing on the Roll.

Of the total number, 21,014 have passed the Board's examination, and 9529 have been admitted in virtue of prior certification under Section 2 of the Midwives Act. The trained midwives are consequently 31,543 in number and the untrained 9970 the respective proportions being 74.4 per cent. and 24.6 per cent., as against 73.6 per cent. and 26.4 per cent. in the previous year. The percentage of trained midwives who practise as such is relatively small, and may be estimated at less than 22.1 per cent. of those on the Roll. Of the untrained midwives it is probable that about 53.5 per cent. are in practice though frequently to a small extent only. The corresponding figures for 1914-15 were 23 per cent. and 56 per cent. respectively. From this it appears that although the number of names appearing on the Midwives Roll increases annually, the proportion of practising midwives diminishes. This diminution is actual as well as relative.

An important passage in the report refers to "covering." It proceeds:—

The experience of those engaged in the administration of the Midwives Act shows that the "covering" by medical practitioners of uncertified women acting as midwives is by no means infrequent. The most open method of infringing the provisions of Section 1 (2) of the Midwives Act is where the uncertified woman undertakes the case and delivers the patient. She then sends for the doctor, who notifies the birth and signs the maternity benefit form, but does not examine the patient or attend to her. For this the uncertified woman pays him a small fee, and if trouble arises the case is claimed to be his although he never heard of the patient before the uncertified woman sent for him, and has never seen her since he signed her maternity benefit form. Another form of "covering," less flagrant and consequently more difficult to detect and deal with, is where the medical practitioner books the case as his, but arranges with the uncertified woman that she shall deliver the patient and send for him only in case of abnormality or complication arising where his assistance is required to complete the delivery. If not so sent for, he probably calls during the puerperium and signs the maternity benefit form. It is claimed that the uncertified woman was acting as his nurse, and that he was unavoidably prevented from conducting the delivery. Some local supervising authorities make no effort to deal with this evil, others prosecute the uncertified woman, but so far as is known to the Board none of them have yet brought the conduct of the medical practitioner to the notice of the General Medical Council or made themselves responsible for proceedings taken against him before that body. More than one authority has made representations to the Board on the subject, but has declined to carry the matter further. It has been left to the Board to undertake the responsibility of a prosecution before the General Medical Council.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 29TH.

Repatriation of Invalid Prisoners of War.

Answering Mr. HUME WILLIAMS, Mr. JAMES HOPE (Treasurer of the Household) wrote: We have proposed to the German Government that British and German officers and men who had been transferred to Switzerland shall be repatriated if their infirmities develop in Switzerland to such an extent as to bring them within the scope of the schedule which governs the repatriation of British and German combatant prisoners of war from Germany and this country respectively. It is proposed that suitable cases should be selected by the Swiss medical authorities for recommendation through the delegates in charge of prisoners to the British and German War Offices, with whom the final decision is to rest. From the nature of the proposed agreement it is improbable that the number of men repatriated will be considerable.

THURSDAY, NOV. 30TH.

Vision Test for Metropolitan Drivers of Vehicles.

Answering Mr. PRINGLE, who asked whether any periodical vision test existed for drivers of vehicles in the metropolitan area, Mr. H. SAMUEL (Home Secretary) said: Public carriage

drivers in the metropolitan area are required before they are licensed to produce a medical certificate of fitness in which their fitness as to sight is concerned. After they reach the age of 50 a certificate of fitness is required either quinquennially or as often as the licensing authority may deem necessary. For drivers generally I have no power to impose any test.

Mr. PRINGLE: Is it not advisable to have some test in view of the large number of accidents now occurring?—Mr. SAMUEL: I am not sure that it is so much a question of eyesight as more light.

Appointment of Irish Dispensary Doctors.

Mr. O'SHAUGHNESSY asked the Chief Secretary for Ireland whether he had seen the opinion of counsel published the other day stating that the Local Government Board for Ireland had no power to veto the appointment of doctors for dispensary districts because they were within the military age.—Mr. DUKE replied: I understand that some question of legality has arisen. I am not aware of the opinion to which the honourable Member refers.

Veneral Disease and Intemperance.

Mr. PRATT asked the President of the Local Government Board whether he was suggesting to those local authorities who were preparing schemes for the diagnosis and treatment of venereal disease the desirability of instructional lectures and the publication of information; and whether he was directing their attention to that part of the Report of the Royal Commission on Venereal Diseases where the Commissioners stated that their evidence tended to show that the communication of disease was frequently due to indulgence in intoxicants, and that there was no doubt that the growth of temperance among the population would help to bring about an amelioration of the conditions which their inquiry had revealed.—Mr. LONG replied: The Regulations issued by my Department on this subject empower local authorities to make provision for the giving of instructional lectures, and for the publication of information on questions relating to venereal disease. The circular which accompanied the Regulations has drawn attention to the contents of the Report of the Royal Commission.

MONDAY, DEC. 4TH.

Medical Examination of Recruits.

Answering Mr. SNOWDEN, Mr. FORSTER (Financial Secretary to the War Office) wrote that it had transpired that for a time certain persons, in the desire to avoid military service, were going before several medical boards, sometimes after taking drugs. It therefore became a practice among military representatives to accept the opinion of the first board as the most reliable. The practice of going before several boards had now been stopped.

Recruits with Rupture.

In reply to Mr. MACCALLUM SCOTT, Mr. FORSTER stated that men with rupture, who were fitted with a truss, might be passed for garrison duty abroad or at home.

Medical Students and the Army.

Answering Mr. SAMUEL, Mr. LONG (President of the Local Government Board) wrote: The present arrangements made by the Army Council as to medical students are as follows: Fourth- and fifth-year students are not being called up for ordinary military service. First-, second-, and third-year students are being called up if fit for general service. If not fit for general service they are being allowed to continue their studies. All students allowed to continue their studies are, as a condition, required to join an Officers Training Corps and to attend a minimum number of parades. In practice few first-year students are called up, as they are mostly under 19 and come under a general rule postponing until that age the call of students, medical and other, belonging to an Officers Training Corps. The men called up mostly obtain commissions. First-, second-, and third-year men previously called but not fit for general service were, under an Army Council instruction issued in August, relegated to the Army Reserve to return to their studies subject to the condition above referred to.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BRISTOL ROYAL INFIRMARY.—House Physician. Salary at rate of £120 per annum, with board, &c.

BURNLEY, VICTORIA HOSPITAL.—House Surgeon. Salary £160 per annum, with board, &c.

CHESTER ROYAL INFIRMARY.—House Physician. Salary £160 per annum, with board, &c.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Resident House Surgeon and Assistant House Surgeon.

GENERAL LYING-IN HOSPITAL, York-road, Lambeth.—Resident Medical Officer for three months. Salary £100 per annum, with board, &c.

GLASGOW PARISH COUNCIL EASTERN DISTRICT HOSPITAL, Duke-street.
—Resident Assistant Medical Officer. Salary £250 per annum, with board, &c.

GUY'S HOSPITAL, London, S.E.—Assistant in Bacteriological Department. Salary at rate of £250 per annum.

HAMPSTEAD GENERAL HOSPITAL, Haverstock Hill, N.W.—Pathologist. Salary £100 per annum. Also House Surgeon. Salary £200 per annum, with usual residential allowances.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.
—House Physician for six months. Salary 33 guineas.

LEEDS CITY HOSPITALS FOR INFECTIOUS DISEASES AND TUBERCULOSIS.
—Assistant Medical Officer. Salary at rate of £250 per annum, with board, &c.

LEEDS PUBLIC DISPENSARY.—Resident Medical Officer. Salary £200 per annum, with board, &c.

LIVERPOOL, ROYAL SOUTHERN HOSPITAL.—Three House Surgeons (Male or Female) for six months.

LONDON COUNTY COUNCIL SCHOOL TREATMENT CENTRE, Hammersmith, W.—Ophthalmic Surgeon to the L.C.C. Eye Treatment Centre, Carnforth Lodge, Broadway, Hammersmith, one half-day weekly. Salary £50 per annum. Also Anaesthetist to L.C.C. Throat Bar and Nose Treatment Centre, one half-day a fortnight. Salary £25 per annum.

LONDON THROAT HOSPITAL, 204, Great Portland-street, W.—House Surgeon. Salary £50 per annum.

MANCHESTER CITY SANITARY COMMITTEE.—Medical Officer. Salary £350 per annum.

MANCHESTER COUNTY ASYLUM, Prestwich.—Locum Tenens. Salary £7 7s. per week, with board, &c.

MELBOURNE, AUSTRALIA.—Director to Walter and Eliza Hall Institute of Research in Pathology and Medicine. Salary £300 per annum.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Physician. Salary £200 per annum, with board, &c.

ROTHESHAM HOSPITAL.—Junior House Surgeon. Salary £150 per annum, with board, &c.

ROYAL COLLEGE OF PHYSICIANS, London.—Milroy Lecturer for 1918.

ROYAL NATIONAL ORTHOPEDIC HOSPITAL, 234, Great Portland-street, W.—Resident Surgical Officer.

ST. GEORGE'S HOSPITAL, S.W.—Medical Officer to the Veneral Department for six months. Salary at rate of £400 per annum.

SHEFFIELD UNION HOSPITAL, Private.—Two Female Resident Assistant Medical Officers. Salary £250 per annum, with rations, &c.

SHERWSBURY, SALOP COUNTY COUNCIL.—Temporary Tuberculosis Medical Officer. Salary at rate of £500 per annum.

SOUTH AFRICA MENTAL HOSPITAL SERVICE.—Two Assistant Mental Physicians (men only). Salary £440 per annum. Also Three Assistant Mental Physicians (men or women). Salary £360 per annum, with board, &c.

SOUTH LONDON HOSPITAL FOR WOMEN, South Side, Clapham Common, S.W.—Female Medical Officer in Charge of Gynaecological Clinic. Also Female Medical Officer in Charge of Skin Clinic. Also Pathologist, part time only.

SOUTHAMPTON PARISH.—Resident Assistant Medical Officer for the Infirmary, Shirley Warren. Salary £250 per annum, with rations, &c.

STOKE-ON-TRENT INFECTIOUS DISEASES HOSPITAL, Bucknall.—Female Resident Assistant Medical Officer. Salary £200 per annum, with board, &c.

UNIVERSITY COLLEGE HOSPITAL.—Assistant in the Dermatological Department. Salary £200 per annum.

VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST ON THE SEPARATE PRINCIPLE.—Assistant Resident Medical Officer.

WALSALL AND DISTRICT HOSPITAL.—Female Senior House Surgeon. Salary £250 per annum, with board, &c.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Louth, Lincoln.

Births, Marriages, and Deaths.

BIRTHS.

BAGSHAW.—On Dec. 1st, at Limassol, Cyprus, the wife of Major H. Val Bagshawe, D.S.O., R.A.M.C.—twin daughters.

BEAN.—On Dec. 1st, at Holles-street, Dublin, the wife of Lieutenant-Colonel W. Egan, R.A.M.C., of a daughter.

MCLEAN.—On Dec. 2nd, Margaret, the wife of Dr. W. McLean, Medical Inspector, Board of Trade, Liverpool, of a daughter.

MARRIAGES.

FRASER—GALBRAITH.—On Nov. 30th, at St. Simon's, Milner-street, S.W., Kenneth Grant Fraser, L.R.C.P. & S. Edin., Temp. Captain, R.A.M.C., to Charlotte Eileen, younger daughter of the late Henry Galbraith, Archdeacon of Glendalough.

JAMESON—BAINES.—On Dec. 1st, at St. John's Church, Putney, George Dearn Jameson, Captain, R.A.M.C., to Phyllis, only daughter of Mr. and Mrs. Baines, of Carlton-road, Putney-hill.

TRINCA—COLLIER.—On Nov. 30th, at St. Barnabas, Leicester, by the Rev. A. E. Manvell, Captain A. J. Trinca, R.A.M.C., of Melbourne, Australia, to Adela Margaret, eldest daughter of Mr. and Mrs. J. W. Collier, of Fairholm, Uppingham-road, Leicester.

WILLIAMSON—KEITH.—On Nov. 28th, at St. Philip's, Kensington, Captain Maurice Joseph Williamson, R.A.M.C., to Dorothy, daughter of the late Dr. Keith, Abeyne.

DEATHS.

McTAVISH.—On Dec. 2nd, at Kilmartin, Kingwear, Devon, Brigade Surgeon Alexander Campbell McTavish, late 60th Rifles and 17th Lancers.

SWAIN.—At The Crescent, Plymouth, William Paul Swain, F.R.C.S., aged 32 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

JEAN PITART, SURGEON, MEDICAL REFORMER, AND POET.

At a recent séance of the French Academy M. Antoine Thomas read some notes on the life of Jean Pitart, a surgeon and poet of the thirteenth century in Paris, concerning whose career there is a good deal of uncertainty. Puccinotti, in his "Storia della Medicina," alleges that Lanfranc of Milan found in Paris a surgical college, established there in 1271 by Jean Pitart; but Lanfranc himself, who speaks of his hearty welcome by the French medical men when on a visit to Paris, says nothing of Pitart. The date and place of Jean Pitart's birth are unknown; probably he came from Normandy, and the close intimacy between him and Henri de Mondeville confirms this view. François Quesnay says he died, aged 77, in 1315, but there is evidence that he was alive in 1325, because in that year the Comte de Valois in his will bequeathed 50 livres to Pitart.

The first authentic record of Pitart is at Paris in 1292, when he pays 20 sous as an impost as a resident in the Rue Neuve Notre-Dame. By 1298 he had risen to the rank of court surgeon, for in that year he was in receipt of fees as such from Philippe le Bel. In 1303 he accompanied Philippe IV. to the South of France, for an account of royal expenditure at Toulouse shows that, for 40 days' service, he was paid 7 livres 13 sous and certain apparel. In 1308 he was with Robert d'Artois at Conflans, and in 1312 he went to Artois to attend a certain countess, doubtless successfully, for he received for his services on that occasion no less than 100 livres, a large honorarium in those days; also robes for himself and Madame Pitart. He continued to be the royal surgeon under Louis X. and Philippe V., for the latter presented him with property at Cotentin and elsewhere. Finally, in 1327, Charles IV. calls him his "*dilectus chirurgicus*" in an act giving Pitart further emoluments.

Pitart's decease seems to have occurred at the end of 1328. An interesting event in his long career was his appointment as president of a committee decreed in 1311 by Philippe IV. to inquire into the irregularities occurring in the surgical profession in Paris. The committee were empowered to register those persons worthy of exercising the duties of the craft, which had been usurped without any proper qualification by many barbers. These amateurs had been rounded up by Etienne Boileau, Prefect of Paris, in 1301, when 29 of them were prohibited from practising unless they passed some examination. Pitart probably had a hand in preparing the preamble of the edict promulgating the commission, for, as will be seen from the quotation, it condemns the abuses arising from the actions of uneducated persons, whilst flattering the citizens of Paris upon the erudition of its true scientists:—

"Ne in villa Parisiensi, quæ proprie locus est fluentissimi fontis scientiæ, quæ etiam scientes pavit et, in utero recipiens ignorantes, tandem sum fontis sapientiæ germinosis rigatos rivalet diversarum facultatum reddit scientiis insignitos, talia de cetero perpetrentur."

M. Thomas designated Pitart a poet, one proof of his capacity in that profession being four lines of verse inscribed upon a well which he had caused to be dug in the Cité quarter of Paris; this was still in existence in the seventeenth century. The distich ran as follows:—

Jehan Pitart en ce repaire,
Chirurgien-le-roy, St faire
Ce puits en l'an mil trois cent dix,
Dont Dieu lui doint son paradis.

Pitart excavated the well to prevent the neighbours drinking the dangerously polluted Seine water, and obviously considered the work meritorious. M. Thomas is also satisfied that Pitart wrote a poem, "Le Dit de Bigamie," in which he refuted the views of those who held that a widower who re-married was a bigamist. Jean Pitart appears to have been a man of sound sense as well as of learning which was eminent in its day.

A CHILD-WELFARE ANNUAL.

THE "Child-Welfare Annual," edited by Dr. T. N. Kelynack (John Bale, Sons, and Danielsson, Limited. 1916. Pp. 346. Price 7s. 6d.) claims to be an authoritative guide and directory of the chief philanthropic and business agencies in the United Kingdom concerned with the care of children. The volume contains a number of original communications on the various aspects of child-welfare work by several well-known authorities; thus Dr. J. W. Ballantyne contributes a short article on Pre-maternity

Practice, Mr. Benjamin Broadbent another on the History of the Evolution of Child-Welfare Work, and Mr. B. Seeborn Rowntree another on Childhood and Poverty. These 24 articles occupy one-third of the book. The rest of the volume is devoted to short accounts of the different schemes for child-welfare work originated throughout the kingdom, and, finally, there is a directory of the National Associations, societies, orphanages, homes, and other institutions dealing with the many aspects of child-welfare work. It is a volume with which no philanthropic society can afford to dispense.

RESIDENT MEDICAL OFFICERS AT CHILDREN'S HOSPITALS.

To the Editor of THE LANCET.

SIR,—Will you kindly grant me a few lines in your valuable columns to thank the authorities of Paddington Green Children's Hospital for their very candid advertisement in THE LANCET of Nov. 25th for applications for the posts of house physician and house surgeon there? They say there: "As this is a children's hospital applications from Indian or Egyptian students cannot be entertained." It is certainly gratifying to find someone at least who will say such things out. I am an Indian myself and happen to be the resident medical officer at the East London Hospital for Children, and the house physician here is an Indian too. It is beside the point to enter into any comparison between the two hospitals.

I am quite aware of the invidious position we Indians stand in with regard to English hospitals, even as students. There has not been, to my knowledge, any reason given out yet for this exclusion, and I am obliged to the authorities of Paddington Green Children's Hospital for having supplied it without having been, as far as I know, under any compulsion to do so. Egyptians and Indians alike ought to be grateful they need waste no time over Paddington Green Children's Hospital, as they have ever so often done applying for hospital vacancies in Great Britain.

I would recommend all Egyptians and Indians to get a copy of THE LANCET of Nov. 25th were it only to take a cutting out of it and keep it for future reference.

I am, Sir, yours faithfully,

K. S. BHAT,
Resident Medical Officer, East London Hospital
for Children,
Shadwell, E., Nov. 27th, 1916.

To the Editor of THE LANCET.

SIR,—An amusing and curious statement has been made in an advertisement column of a recent issue of THE LANCET by the secretary of Paddington Green Children's Hospital: "As this is a children's hospital applications from Indian or Egyptian students cannot be entertained."

I can quite understand anybody who says frankly, "I do not want you," but why on earth Children's Hospital has been put forth as an excuse for excluding Indians, I do not quite follow. Does it mean that such people are specially unsuitable for children's hospitals because children and their mothers or relatives can't stand Indian residents? If it is really that, then I can assure Mr. Pearce he is entirely mistaken. I am in a like institution myself, and I know several Indian doctors who have acted in similar capacities in other places, and there are none who would say that they have not acquitted themselves well and creditably, and without ever being in the least little bit the cause for falling off of attendance at these places simply because of their nationality. *Per contra*, the daily attendance of patients has gone up in more than one instance. Besides, I have noticed—and it is much to their credit—that the patients themselves have far less prejudice against us than many of the people at the head of the institution. And what is more, they feel quite satisfied with the treatment they get from Indian residents. But if it is a question of mere prejudice—and everyone is entitled to his own opinion—I have very little to say. Only, why specify this publicly in black and white and thus cast a slur on a whole nation for no fault of its own? Why make these appointments so glaringly exclusive? If I do not like anybody, I may not take him. But why publicly ban him like this, especially when he does not deserve it? There is such a thing as politeness, and even Indians deserve it. Besides, are Indians so very objectionable after all? How is one to know, if one never deals with them? From their colour? Preposterous!—I remain, Sir, yours faithfully,
Nov. 28th, 1916.

AN INDIAN DOCTOR.

To the Editor of THE LANCET.

SIR,—The human child although by instinct quick to recognise and take advantage of the varying personalities of the grown-ups who minister to its needs, does not untaught develop any prejudice about the colour of their skin. The sick child is grateful to any kind hand that ministers to its comfort, whether white, pink, yellow, or black. It is therefore unnecessary on this ground for the secretary of a children's hospital to warn Indian or Egyptian students from applying for resident posts in the hospital. The

problems of West and East must be faced, and the medical profession will doubtless have its special contribution to make to their solution. But nothing will be gained by presuming prejudice where none exists and anticipating the exercise of reasoning by poisoning the springs of thought.

I am, Sir, yours faithfully,

Dec. 2nd, 1916. LEUCODERMA.

DANGEROUS PRACTICAL JOKES.

At an inquest recently held at Hampstead it was proved that the deceased, who suffered from tuberculosis and heart disease, had died as the result of a practical joke by a fellow workman. A lad, 15½ years of age, admitted that he had connected the door handle of a cabin entered by the deceased with an electrical fuse-box, with the effect that any person who turned the handle would naturally receive a shock. That the first person to do so was ill-suited to receive such a shock was a circumstance which the lad in question might perhaps be excused for not realising. Workmen and boys, however, who handle dangerous forces such as steam, electricity, and compressed air habitually, are apt to be careless of the results when they wish to play tricks upon their fellows. There is an old proverb about playing with edged tools which might be applied in their case, for no doubt self-reproach must be felt by them when a comrade is killed, or even dangerously injured, through their desire to amuse themselves at his expense. Who first applied the term "practical jokes" to the manifestations of humour with which it is associated we do not know, but they seem to have had their greatest vogue in the latter half of the last century. Many were harmless and were at times elaborated with great skill and ingenuity, others were simpler and rougher, and were often intentionally painful to those upon whom they were inflicted. The names of E. A. Sothorn and J. L. Toole, both comedians with a wide circle of friends, will always be associated with stories relating to the former class, and many more or less prominent sportsmen and members of bygone "Society" could no doubt be mentioned by their survivors as having played wild pranks which would put in the shade the feats in the same direction of the youths of the present day. Some of our senior physicians and surgeons also could recall incidents of their student days in which they can hardly now realise that they once participated. Latterly practical jokes of the painful class and of an organised description have chiefly been devised for the benefit of unpopular members of a regimental or ship's mess, but this sort of thing will not survive the war, because the men without the popular qualities have shown themselves time and again the best thinkers and fighters.

AN ARTISTIC ALMANAC.

Messrs. Abdulla and Co., cigarette manufacturers, have published an almanac to be sold at 1s. 4d. a copy, and of that sum 1s. will be paid to the British Red Cross Society. Among the artists whose work is produced in black-and-white or colour are the following: C. Percy Bowyer (South Africa), Edouard J. Claes (Belgium), I. Jalea (Rumania), R. G. Mathews (Canada), F. Angeli Radovani (Serbia), Harry Rountree (New Zealand), Paul Thiriat (France), Alcide Davide Campestrini (Italy), E. A. Cox, R.B.A., B.S.W. (England), Kazunori Ishibashi (Japan), Fred Leist (Australia), Gerald Moira (Portugal), Michael Sevier (Russia), and Frank Dadd, R.I.

VITAL STATISTICS OF ASHANTI

Mr. Arthur J. Philbrick, acting Chief Commissioner of Ashanti (which is administered as a dependency of the Gold Coast Colony), states in his annual report that there has been a large increase of the population since the Census of 1911, when the total was 287,814 (141,231 males and 146,583 females). The inhabitants of Kumasi, the chief town, are estimated to number 24,000 or more. The general health during 1915 was good on the whole, and there were no epidemics among the people. The European community, numbering about 400, consists exclusively of officials, merchants, miners, and missionaries. Eight officials and 4 non-officials were invalided during the year; 33 Europeans were admitted to hospital and 119 treated outside, the prevalent disease being malaria of a mild type. 1097 natives were admitted to hospital and 10,425 treated outside. A native hospital at Kumasi—a model establishment of its kind—was completed in November. A well-equipped laboratory has recently been built in connexion with the office of the medical officer of health. The rainfall at Kumasi in 1915 was 52.18 inches, the mean temperature 76.86° F., and the degree of humidity 86.24. The climate is not suited for permanent European settlement; the average stay in the country is 12 months, after which recuperation in a more bracing climate is necessary. Mr. Philbrick notes with satisfaction the eagerness of the villagers to improve the conditions under which they live.

ANTHRAX-INFECTED SHAVING BRUSHES.

At a meeting of the Health Committee of the City of Liverpool, held on Nov. 30th, Dr. E. W. Hope, the medical officer of health, reported that he had found two "imitation badger" shaving brushes infected with anthrax. He thought it desirable to warn the public not to buy shaving brushes answering the following description. One had a plain wooden black handle and the other had a white-metal handle with a small mirror at the top. It was suggested that these brushes were but another example of the diabolical tactics of the enemy, for the black-handled brush came from the continent, while inquiries are being made to trace the foreign place of origin of the other. It was also stated that no process could be relied upon to disinfect a brush which did not at the same time undermine its utility. While the bacillus of anthrax is readily destroyed, the spores have a high degree of resistance to heat and chemical agents, but it seems probable that while animal skins are most difficult to disinfect, a shaving-brush could be sterilised by long exposure in boiling water, say for two hours, or immersion for one hour in perchloride of mercury solution (1:500) for at least an hour. It has been shown, however, that the bristles imprisoned in the cement used in the brush may still show anthrax after this treatment, and heat may melt this cement and spoil the brush, while a liquid disinfectant would not reach the infected parts. The whole question calls for careful inquiry and the adoption of measures directed against the importation of such disease-bearing brushes. Similar cases have already been reported in THE LANCET.

By an Order in Council issued on Wednesday a medical practitioner who prescribes cocaine otherwise than in accordance with the regulations is liable to summary punishment under the Defence of the Realm Act.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Dec. 12th.

PSYCHIATRY (Hon. Secretaries—Bernard Hart, G. F. Barham): at 4.30 P.M.

A CLINICAL MEETING will be held at the Maudsley Hospital, Denmark Hill.

Major F. W. Mott: (1) Demonstration of Cases of Shell Shock; (2) Demonstration of Macroscopic and Microscopic Changes in the Brains of Fatal Cases.

Arrangements will be made for members to see over the hospital. N.B.—The Maudsley Hospital may be reached via the Bakerloo Tube to the Elephant and Castle, and thence to Denmark Hill by tramway; also by motor bus, 12A, from Piccadilly; and by rail from Victoria or London Bridge to Denmark Hill.

Wednesday, Dec. 13th.

SURGERY (Hon. Secretaries—Raymond Johnson, V. Warren Low): at 5 P.M.

Papers:

Miss Frances Ivens, M.S.: A Clinical Study of Anaerobic Wound Infection, with an Analysis of 107 Cases of Gas Gangrene. N.B.—Members of other Sections are invited.

Friday, Dec. 15th.

STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—A. S. Blundell Bankart, E. A. Cockayne, C. P. Lapage): at 4.30 P.M. Cases will be shown.

Short Paper:

Dr. F. Parkes Weber: A Case of Cyclic Vomiting with Acidosis.

ELECTRO-THERAPY (Hon. Secretaries—E. P. Cumberbatch, Robert Knox): at 8.30 P.M.

Papers:

Dr. Finzi: Pharyngeal Pouches.

Dr. Salmon: The Changes observed in Osteomyelitis of Different Origins.

Papers will also be read by Dr. Jordan and Dr. Martin Berry.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY.—8.30 P.M., A meeting devoted mainly to Demonstrations of the Principles of the Re-education of the Wounded. The following gentlemen will take part:—Mr. A. Lawson: The Work being done for the Blind at St. Dunstan's; Mr. F. D. Wood, A.R.A.: Facial Restoration; Mr. J. B. Mennell: Limping and the Re-education of Walking; Mr. McMahon: The Treatment of Shell-shock Stammering; and Dr. A. Bradford.

HUNTERIAN SOCIETY, at the Royal Society of Medicine, 1, Wimpole-street, W.

WEDNESDAY.—5 P.M., Paper:—Dr. R. Hingston Fox: The Use of Antimony in Ancient and Modern Medicine.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

FRIDAY.—5.30 P.M., Paper:—Dr. H. H. Scott: The Vomiting Sickness of Jamaica.

ILLUMINATING ENGINEERING SOCIETY, House of the Royal Society of Arts, 18, John-street, Adelphi, W.C.

FRIDAY.—5 P.M., Mr. L. Gaster: War Economies in Lighting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynaecological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics.—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. E. Whipple). Gynaecological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. E. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics.—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. E. Whipple). Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynaecological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie). 3.30 P.M., Special Demonstration:—Dr. J. Metcalfe: Screen-Demonstration of X Ray Diagnosis of Cardiac and Pulmonary Lesions.

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

LONDON HOSPITAL, Mile End-road, E.

THURSDAY.—11 A.M., Dr. J. H. Sequeira: Early Diagnosis and Treatment of Syphilis. (Lecture IV.) In connexion with this lecture Dr. J. McIntosh will give a Practical Demonstration of the Examination for Spirochetes and Wassermann Test.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET OFFICE, Dec. 1st, 1916.

| Date. | Wind fall. | Solar Radio in Vacuum. | Maxi- mum Temp. Shade. | Min. Tem. | Wet Bulb. | Dry Bulb. | Remarks. |
|---------|------------|------------------------|---------------------------------|--------------|--------------|--------------|----------|
| Nov. 30 | ... | 45 | 41 | 40 | 39 | 40 | Overcast |
| Dec. 1 | ... | 42 | 42 | 32 | 32 | 33 | Overcast |
| " 2 | ... | 44 | 42 | 33 | 39 | 40 | Overcast |
| " 3 | ... | 42 | 42 | 39 | 40 | 40 | Overcast |
| " 4 | ... | 57 | 41 | 34 | 33 | 34 | Overcast |
| " 5 | ... | 43 | 41 | 34 | 34 | 36 | Cloudy |
| " 6 | ... | 47 | 43 | 36 | 35 | 36 | Cloudy |

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

The following journals, magazines, &c., have been received:—British Dental Journal, Journal of Nervous and Mental Disease, Therapeutic Gazette, Dominion Medical Monthly, Practitioner, British Journal of Dental Science, New Zealand Medical Journal, Indian Medical Gazette.

EDITORIAL NOTICES.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners. Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C.

MANAGER'S NOTICES.

ALTERATION IN THE PRICE OF "THE LANCET."

INCREASED war expenses and cost of production necessitate an increase of the price of THE LANCET. Commencing with the first issue in the New Year, the price will be 8d. instead of 6d. The rates of subscription will remain as revised in October.

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Some Practical Observations

ON THE

INJURIES OF WAR.

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(Concluded from p. 969.)

GUNSHOT FRACTURES OF THE BONES.

THESE injuries are so numerous, diverse, and extensive that the space of an article will not permit me to deal fully with the subject. The first question to decide is the necessity or otherwise of amputation. The subjects are usually strong and healthy, and conservative surgery should be the rule. In the many dubious cases where the reasons for and against amputation are about equal, the casting vote may be given on the side of preservation of the limb. Very hopeless-looking injuries may be remedied by the power of natural repair, especially in the upper extremity. I have had cases where portions of the shafts of the radius and ulna have been clean blown away and yet a forearm and hand preserved which, though unsightly, is yet of more utility than any artificial limb. I have also recently seen a case where fully six inches of the shaft of the humerus was shattered into pieces of all sizes and shapes. The skiagram presented appearances which looked hopeless, but the patient now has a firm and good union. When the shafts of the bones are shattered into the knee or ankle the outlook is very serious; in the case of fractures in the elbow or shoulder far less so.

Injuries of the main vessels and nerves and extensive destruction of the soft parts are arguments for removal. But in the upper extremity I have twice ligatured the brachial, or a large vessel like it, in compound fracture of the humerus with a huge extravasation of blood and still saved the limb. Enormous swelling and evidence of incipient gangrene, of course, calls for amputation. If it is determined to save the limb the question of removal of the shattered bone has to be considered. This is too often very extensive, the shaft being broken into many pieces for several inches. It is difficult to know what pieces will live and what will necrose and cause future trouble. I think it the safe practice to enlarge the wound and remove all small loose pieces of bone, but retain any large elongated splinters and flakes, particularly if they are adherent to periosteum. Small fragments of dead bone lead to obstinate after-sinuses, the new bone encasing them and leading to great trouble in the after-treatment.

The question of "plating" compound fractures is difficult to discuss, for much difference of opinion regarding its value exists even among surgeons of good operative experience and skill. Many, indeed, regard it with actual disfavour. In the early days of the war this operation was advocated enthusiastically as securing immobility of the fragments and preventing much of the agonies of transit. And from this point of view it would seem to have truly a great deal to recommend it. Then it was found that if done early in conditions of sepsis subsequent bone trouble arose about the screws. The latest opinion of the distinguished originator of this practice seems to incline to waiting until a certain amount of union has occurred and sepsis has largely disappeared, and then to divide the uniting medium, still sufficiently soft, approximate the ends of the bones, and plate them. In this case the operation would be confined to badly displaced fractures, which should not be common. But in such its value seems evident. Personally, I have not altered an opinion I expressed in writing many years ago, that the operative treatment of fractures should be reserved for exceptional cases and should only be performed by surgeons of good operative experience. In the few cases of fracture I have operated upon in the past I have drilled the bones and united them by stout silver wire with good results.

In all cases of gunshot fracture very free drainage and cleanliness are essential, counter openings being made if needful and the parts frequently flushed through large tubes.

No. 4868.

The "absorbent" dressings should be frequently removed. The greatest caution should be exercised in applying splints or bandages in the early treatment of these cases. It has to be remembered that a "smashed limb" would be a more accurate description of many of these injuries than a compound fracture. The lesions are of an extent and gravity I have seldom seen in civil practice. The exudation of serum is enormous, and any constriction of the limb which impedes the circulation precipitates gangrene. It is better to have in view the saving of the limb and life of the patient than to make vain attempts to adjust the bones accurately by forcible splinting and bandaging over swollen and inflamed tissues. If extension can be applied I most strongly favour it, and the limb placed in as good a position as possible and supported by heavy sand-bags. The wounds are not covered up and can be readily dressed. Should great swelling and threatening of gangrene occur, incisions should always be made and should be carried through the deep fascia. This proceeding may often save a limb, and I have noticed that this important measure is not lost sight of at the front. I have recently treated some severe cases of gunshot fracture of the femur by heavy extension and support with sand-bags with excellent results, the shortening being slight and the union firm. The skiagram of a badly smashed long bone is very disquieting to the inexperienced, and would be a certain factor for substantial damages if shown to a jury in a court of law. A slight overlapping of these fractures is common, but the unsightly "spiky" ends, had as they appear in an early skiagram, become softened and "rounded off," and the ultimate results are far better than the early appearances would lead one to believe. It is certain that alarming appearances shown by the skiagram do not of necessity mean a useless limb afterwards, and utility of a limb is the principal thing to be aimed at. One of the great troubles in these cases of "smashed" bones is the persistence of sinuses, and the after slow elimination of fragments of necrosis. Though the surgeon may have taken the utmost care to remove all small fragments, some pieces will escape him. Or, by a pardonable error of judgment, he may leave fragments expected to unite which afterwards do not join as he anticipated, or necrosis of the ends of the bones may ensue. Sepsis, burrowing abscess, and sinuses with necrosis are particularly troublesome in deeply seated smashed bones. Several desperate cases of compound fracture of the pelvic bones have been successfully dealt with, but at an expense of repeated operations and time extending over many months. These cases are trying to the surgeon, nurses, and especially to the patient. In cases where the sinuses long persist, in spite of the use of the curette, a definite sequestrectomy must be performed when the shaft has sufficiently strongly united. Skiagrams will give an indication of the extent and position of the necrosis. These operations, from the amount of cicatricial tissue present and matting of the parts, are very difficult, and with the boldest operating may fail in removing deeply encased sequestra. An additional difficulty in cases of gunshot or shell fracture is the frequent multiplication of injuries; a man with a smashed femur may have also a badly fractured humerus and an extensive flesh wound, great masses of muscle being "blown away." Rigid splinting of such cases is well-nigh impossible, and the energies of surgeons and nurses must be devoted to saving life and to getting the bones to unite in as good a position as is feasible. Those who criticise unfavourably the final results of these formidable cases are those who have had no experience of them.

So soon as the condition of the parts will allow of it massage must be energetically resorted to. The neighbouring joints must be moved and the matted tendons exercised in their sheaths. On the thoroughness with which this is done depends the speedy restoration or otherwise of the functions of the limb. I do not think it safe to employ massage in the very early days of a fracture. The risk of displacing clots in the lacerated veins and causing pulmonary embolism is not imaginary. I have seen fatalities from this very cause. Massage of fractures, rather than rigid splinting, was energetically used in the wards of St. George's Hospital, especially in the practice of Sir W. Bennett. The results were so excellent I cannot sufficiently recommend it. The treatment of the stiff joints by mechanical exercise is of paramount importance.

B B

I may close this too brief note on gunshot fractures by expressing my belief that a discussion on the operative treatment of fractures, after the war, by the surgeons engaged and the wide and varied experiences afforded would be very useful for the guidance of the profession in the future.

AMPUTATIONS FOR INJURIES OF THE LIMBS.

Many of the fixed operations of the text-books have to be modified by the ingenuity of the surgeon for the needs of the special case presented to him. In the foot and hand especially "trimming" operations may have to be invented, the flaps being taken from diverse situations. I have already published my belief that cutting a limb straight off without flaps in cases of gangrene or threatening gangrene is not good practice, but that thick flaps should be fashioned, left open, and allowed to drain. My views have been controverted, and I hardly like to be dogmatic. I can only suppose that conditions occur at the front I am not aware of or do not appreciate. If rapidity be aimed at, the old-fashioned transfexion operation is all that is needful. I have found the after-formation of a good stump in these unfortunate cases is not easy. In all amputations we should have in mind the needs of the mechanic and the application of artificial limbs afterwards. We should try and avoid presenting the surgical mechanic with conical, ill-formed, or painful stumps, most difficult for him to satisfactorily deal with and a source of misery to the patient. The "drawing out" and shortening of all main nerves at the time of amputation is a matter of the first importance if we wish to avoid painful "neuralgic" stumps. The cutting of too short flaps, with subsequent retraction and bone protrusion, is an error many of us have in our surgical careers committed. A good general rule is as follows. The long flap should be two-thirds of the circumference of the limb, at the point the bone is divided, and the short flap one-third. The edges of the flaps for two inches should be skin and fascia, the bases always of muscle. The covering of the ends of the bones with skin and fascia only generally leaves poor results. The cicatrix should always, if possible, be on the side or on the anterior or posterior aspect of the stump, and never over the ends of the bones.

The descriptions of amputations in the various text-books on operative surgery are innumerable, especially in foreign literature, and I will only venture to express my experience and advocacy of the operations I have found to give the best results in my own practice. Many of the described amputations of the foot, I feel sure, are of greater utility in the Examination Hall than in actual practice. The one bugbear in amputations of the anterior part of the foot is the action of the tendo Achillis, which persistently draws up the heel and causes the front of the stump to impinge on the ground, becoming tender and sore. Elongation of the tendon improves this condition certainly, but does not entirely cure it. I believe the two best amputations of the foot, as regards the after-walking powers of the patient, are those of Syme and the sub-astragaloid amputation of Farabeuf. Anyone performing Syme's amputation for the first time or after a long interval of surgical inactivity will do well to note the exact lines of incision in the formation of the heel flap, and the importance of so dissecting this flap that its nutrient vessels, especially the internal calcanean artery, are left intact. Sloughing of the heel flap is the main risk of this operation, and is usually brought about by faulty operating. If the foot be removed about the level of the transverse tarsal joint, I have found it better to make the long flap from the dorsum of the foot rather than the sole. All the extensor tendons should be included in the flap. They adhere to the front and under surface of the stump, and the result is a marked power of extension, and counteraction of the evil traction of the Achillis tendon.

In the leg the operation of Farabeuf, by the long external flap of skin, fascia, and all tissues down to the bone, gives excellent results. The end of the tibia should be well rounded off, and it is especially important that the anterior tibial nerve be removed from the flap, or it will be laid right across the bones. The cicatrix is well away from future pressure. I believe I have in past practice performed all the different amputations through the knee, and think that of them to be far the best. If the femur be divided just at the base of the condyles, and the bone rounded off with a large bulbous end is left which so embarrasses the

fitting of an artificial limb, and, moreover, the thigh stump is a long one. In amputation through the thigh itself the anterior flap should be the longer, and then the cicatrix falls behind the stump and line of pressure. If the thigh be so shattered high up as to necessitate amputation at the hip, I think it wise, in order to minimise shock, to cut through the soft parts as low down as feasible, the bone being removed by an external incision, and the periosteum preserved as far as possible. The hæmorrhage can be checked by ligatures of the common femoral or by the method of acupressure of the anterior flap. This is an excellent procedure, and I believe was first advised by Mr. Lynn Thomas.

In the upper extremity in cases of laceration of the hand one or more of the digits, especially the thumb, should be preserved if possible. Here the so-called "trimming" operations are advisable. All the other amputations of the forearm and arm should obey the principle of making one flap longer than the other, so as to bring the cicatrix well away from the end of the bones, and the flap must not consist of skin and fascia only. It is especially important to draw out and remove the main nerves, for in the upper extremity "neuralgic" stumps are only too common.

The amputation at the shoulder-joint should be avoided if possible and every effort made to preserve even a very short stump, as this much aids the surgical mechanic afterwards in fitting on an artificial limb. I have had no experience of the implantation of bone in this locality, and do not know the after-results.

QUESTION OF ANÆSTHETICS.

I hold to the belief that in civil practice no one anæsthetic is applicable to all cases, and that selection should be made according to the type of patient, the condition of his heart and lungs, and operation to be done. In the exigencies of military surgery chloroform is perhaps the best general anæsthetic, and men who are ill or weakened by wounds take it remarkably well. In the hospital I assist at chloroform has, I believe, been universally administered. The preliminary injections of morphia have not been employed. The anæsthesia has been very satisfactory.

THE LATENCY OF ORGANISMS.

I use this term for want of knowledge of a better one. It is to express a condition which was rather new to me, but which has been forcibly impressed upon my attention by the experiences of recent practice. It is a remarkable fact that pyogenic organisms may lie for months dormant in a healed wound, and yet be capable of doing serious mischief if the parts be opened by a fresh operation. A typical case was as follows. A healthy young soldier had a bullet embedded in the humerus, just below the shoulder-joint. The wound of entry had healed soundly for nearly six weeks. The operation for removal was unexpectedly difficult. The pectoral muscle had to be divided, and the vessels and nerves retracted, when the bullet could only be removed from the humerus by considerable force with an elevator. The utmost care was taken in the operation and I am certain no septic elements were introduced. The muscle was united by catgut and the parts well drained. To my surprise the case did very badly. All the newly cut surfaces became infected, and the man was seriously ill for some weeks. Moreover, the pus became of a greenish colour, and yet Dr. Solly, who was good enough to examine it, could not detect the *Bacillus pyocyaneus*. I have noticed a green or bluish discolouration of discharge in several "bullet cases." The patients themselves maintain that it is due to some poisonous substance upon the bullet, but I am unable to explain it. I found on inquiry that an outbreak of fresh sepsis in operating at the seat of healed wounds had been experienced by others, and that the newly-out surfaces in the vicinity of an old wound were very apt to become thus infected. This is probably the reason why it is wise to postpone for some months operations on nerves, "secondary" excisions of healed stiff joints, and especially the forcible "breaking down" of adhesions in joints which have been the seat of septic arthritis. The clinical phenomena of these cases were new to me; the subject is a very interesting one, and has its analogy in the vegetable kingdom, where seeds may lie even for years dormant, and are yet ready to start into activity in favourable conditions. Exactly how the organisms are imprisoned I do not know; whether collections of them are securely

enclosed in scar-tissue or dominated by leucocytosis. But the clinical fact is certain, the practical importance great, and laboratory experiments on this matter could not fail to be of utility and interest. I have recently taken pains to wash out, and treat with pure tincture of iodine, the actual cavity or recess left after removal of a piece of shell or bullet.

GENERAL TREATMENT OF THE WOUNDED.

I have alluded to the importance of dietary and exposure to air and sun in these cases. The use of tobacco in moderation has seemed to me of great comfort to wounded men, and I have no doubt it acts as a nerve sedative of value, especially in persistent pain. But I am disposed to condemn the excessive cigarette-smoking prevalent among convalescent soldiers, and I think it should be stopped by the medical officers in charge. I have observed that want of occupation is a considerable trouble among the slightly wounded or nearly convalescent men. Want of occupations of a healthy nature for the men is a great difficulty in city hospitals, and is another drawback of them, and I do not see how this is to be remedied. But in convalescent institutions, at all events, it is better for a soldier to peel the potatoes than to smoke cigarettes on a bench! Light garden work, helping on farms, carpentry, the care of animals, and such-like occupations should be carefully thought out, organised, and instituted. And though the denizens of cities may find such occupations less congenial than tea-parties, cinematographs, or the attractions of music-halls, they are infinitely better for recovery of their health and strength, and obviate the dullness of country residences.

CONCLUSION.

A reflection on the lessons taught by the experiences of the wounds and injuries of this war would lead me to the belief that assisting and furthering the reparative powers of the individual is at least as important as any special remedial applications. Confusion of cause and effect is one of the common errors of life. It is particularly common in our profession and the public always fall into it. Because a simple bullet-wound, for instance, is found healed after one application of a special dressing the credit is given to the dressing and not to the reparative powers of nature.

I think we have a great deal to learn about septic infections, especially mixed infections, and it is unwise to be too dogmatic regarding them. The whole subject needs fresh investigation and study. The practical abolition of tetanus and its horrors by serum injection is a veritable marvel, and opens up great possibilities for the future in the prevention of severe sepsis. I have been immensely struck with the difference of the type of septic infection in this war to that I was familiar with in my very early student days. Amongst all the terribly foul and septic wounds I have lately treated I have not seen a single case of the old-time pyæmia. I mean of abscesses in the joints and viscera, with a jaundiced skin, subcutaneous hemorrhages, and gradual, progressive, and certain failure of the vital powers. This is, to me, very remarkable, and I do not attempt to explain it. In carefully following all that has been written by others I feel sure that we need a more close and cordial coöperation between laboratory experiments and clinical results and observation, and between bacteriologists and clinicians. It is also worth calling attention to the fact that what may be called the surgical aftermath of this war will be laborious and extensive. This will especially be the case in orthopaedic surgery, the divisions of tendons and fascia, with manipulations, massage, and mechanical exercises. Skilled electrical treatment to disused muscles will be of great utility. Funds will also be required for special "surgical boots" and limb supports, as well as for artificial limbs. The large class of nerve injuries will need much attention, and if repair of the nerves be impossible, the various operations of nerve substitution will have to be considered and performed. The "rush" of severely wounded now makes us concentrate all our energies on immediate necessary treatment. But the completion of treatment of many of these cases is a matter of time, patience, and care, which may be well expended in bringing the patients into conditions where they may follow some useful employment.

Finally, I may state that very excellent results can be accomplished even in hastily improvised hospitals, scantily equipped, and with largely amateur nursing. Surroundings of marble, of ventilating fans, and other surgical luxuries

are not superior to correct surgery and strict cleanliness. On the contrary, I believe that an open-air hut hospital would offer advantages over any more confined building, even if fitted with all the costly surroundings supposed to be essential to antiseptic surgery.

The preceding article merely deals with the experiences similar to those afforded in any of the many hospitals scattered through the land. I have not chosen or related rare injuries, though some few have come under notice. If the remarks regarding the use of antiseptics in septic wounds are at variance with some of the leading authorities, I wish to express that I differ from them with all diffidence, and with the conviction that the relation of clinical experience is of great value in determining safe and reliable schemes of treatment.

THE ELECTRICAL TREATMENT OF THE WOUNDED.¹

BY W. J. TURRELL, M.A., M.D. OXON.,
MAJOR, R.A.M.C. (T.).

THE treatment of wounded soldiers by electrical methods appears to have been first systematically practised by the French in 1907 during the Morocco War. Two very interesting articles dealing with this subject have appeared in the French medical papers. One of these, entitled "The Physiotherapy Department of the Military Hospital at Dey in Algeria," by Dr. Hirtz, appeared in the *Archives d'Electricité Médicale*, March 10th, 1913; the other, entitled "The Physiotherapy of those Wounded in War," by M. Miramond de Laroquette, was read before the Congress of the French Academy for the Advancement of Science held at Tunis in 1913.

It is interesting to note that Dr. Hirtz holds strong views on the importance of the independent control of physiotherapy departments. "The department of physiotherapy," he says, "forms a division self-governing in the same way as a department of medicine or of surgery. It was only by degrees that we obtained this independence, and we attach great importance to it. It is only under such conditions that good and exact work can be done. Each department is thus rendered responsible for its own work." The physiotherapy department comprised a subdivision for electrotherapy, one for radiology, and one for mechanotherapy. The number of patients treated during the year 1913 amounted to 323. Dr. Hirtz remarks that, as is usually the case, the greater part of these, that is 236, fell to the lot of the electrotherapy department. The cases treated by electrotherapy included articular rheumatism, acute or subacute, neuralgia, neuritis, paralysis, functional troubles caused by wounds, synovitis, arthritis, and hydrarthrosis. The 236 cases required 12,543 individual séances. The cases treated by radiotherapy included cervical adenitis, arthritis, certain maladies of nervous origin, and superficial tumours. Chronic effusions into joints were treated by pastille doses of X-rays once a fortnight. The success of the department led to the formation of similar establishments in all the large French military hospitals. Both the above writers claim that without the aid of physiotherapy the number of those permanently disabled and in receipt of State pensions would have been much increased.

The fully equipped electro-therapeutic department at the Radcliffe Infirmary, Oxford, opened in November, 1913, was in full working order at the outbreak of war. We were therefore able to avail ourselves of its services on the arrival of the early convoys at the 3rd Southern General Hospital, of which hospital the Radcliffe Infirmary forms a section. It will probably facilitate discussion if I give a brief outline of the electrical methods adopted in our department.

As regards results it is, of course, absurd to compare those obtained at the physiotherapy departments at base hospitals, which are regarded by some unenlightened medical officers as the dumping ground for all obstinate or incurable cases, with the results obtained at command dépôts, to which only those cases likely to be fit for foreign service within six weeks are usually sent. We rely a good deal on ionisation. Except when treating wounds or mucous membranes we do

¹ A paper read before the Section of Electro-Therapeutics of the Royal Society of Medicine on Nov. 17th, 1916.

not attach any importance to the specific action of any special solution, but invariably use a 2 per cent. solution of common salt. We make use of large pads, strong currents, and séances of as long duration as the time of the department will permit. Cases treated in this way include subacute and chronic rheumatism, some cases of neuritis, impetigo, syphilis, septic and indolent wounds, stiff joints, &c. Where the limitation of movement in a stiff joint is due to fibrous bands or adhesions ionisation is often very useful; in these cases massage and manipulation should be performed as soon as possible after the conclusion of the electrical séance. Where the stiffness of a joint is merely due to cold and rigidly contracted muscles, immersion of the limb in hot water for 20 minutes at a temperature of 115° F. will probably be all the treatment preparatory to massage that is required. If expense and space are of no consideration the water may be kept continually agitated by spouting jets (the *eau courante* system) or by a motor-driven propeller (the whirlpool bath system), and thus the molecules of water, cooled by radiation to the limb, are constantly replaced by hotter molecules. The consideration of this refinement, however, more properly belongs to another section.

The treatment of indolent wounds and ulcers by zinc ionisation gives excellent results; after about two or three treatments by this method I now change to ultra-violet radiation from the tungsten arc and obtain more rapid healing. The ionic medication of foul, extensive, and sloughing wounds with the chlorin ion quickly allays the odour and leads to rapid healing with smooth flexible scars and free movement in the surrounding tissues. I believe that this class of case is far too rarely sent to the electrical department for treatment.

In addition to the electrical department I have charge of 60 surgical beds; I have, therefore, had an opportunity of trying this method on early cases. The first case I treated in this manner was a patient with a gunshot wound of the forearm, received at the range of only one or two yards. Selous, the big game hunter, has, I am told, pointed out that a bullet striking a limb at a very short range has a similar effect to that of an explosive bullet. Anyhow, this man had a small bullet wound over the interosseous space about the middle of the extensor surface of the forearm, and nearly the whole of the skin and superficial tissues on the flexor surface of the forearm were replaced by a foul, sloughing, very offensive mass; there was no fracture and no nerve lesion. The wound was treated the day after admission by chlorin ionisation; in 24 hours all offensive odour had ceased, and in two or three days the wound was quite clean, and, I think, in six or seven weeks the patient was discharged to light duty with the wound healed, a very flexible scar, and perfect movement in wrist, hand, and fingers. Probably many have had equally successful results with this treatment, and I do not bring this case forward solely to show the success attending this method, but because of an unaccountable rise of temperature which suddenly occurred about the sixth day with no symptoms and no physical signs, the wound remaining perfectly healthy in appearance. The temperature reached to about 105° F., and subsided in two or three days. This case occurred early in the war. I have had another very similar case with a higher range of temperature, reaching to 106° F. This case was also a wound of the forearm similar to the one I have described, but not quite so extensive nor so foul. It was similarly treated, and there was nothing in the wound or its neighbourhood to account for the pyrexia. A blood culture gave a negative result. I shall be extremely interested to hear if any have experienced these alarming rises of temperature in the treatment by ionisation of extensive superficial and sloughing wounds. I have not experienced any similar rises of temperature when treating deep suppurating wounds and sinuses, however septic they might be.

Many superficial wounds in my wards have been treated by hypertonic solution, but neither in theory can I see that the osmotic pressure of these concentrated solutions can be so effective as the ionic exchange excited by the application of the galvanic current, nor have I found in practice the use of hypertonic in any respect as effective as ionic medication. Hypertonic solutions are certainly more easily and readily applied than ionic medication, and therefore have a large sphere of usefulness in the treatment of septic wounds.

Recently we have been trying Dakin's tubes with Dakin's solution in the treatment of deep cavities associated with

bone lesions and necrosis, and have obtained good results by this method. The treatment, however, seems to require a special kind of wound if the best results are to be obtained. The ideal wound is a deep sulcus in which the fluid may collect, with no sinus leading off and no counter-opening. The sinuses are apt to develop an air or pus block and so prevent the permeation of the fluid. Ionic medication is more penetrating in its effect and is not so affected by these local conditions.

Nerve injuries, contusion, concussion, compression, and section, partial or complete, form a large proportion of the cases that are sent to the department for treatment. If the nerve reacts to the faradic current we utilise a rhythmically reversed faradism from a coil of low efficiency, and in this we follow the generally recognised practice. When there is no reaction to faradic stimulation there is not the same consensus of opinion in regard to the choice of treatment; some prefer condenser stimuli, some the sinusoidal current, and others rhythmically reversed galvanism. Of these the last mentioned is the simplest and cheapest; it is, moreover, quite painless and very efficient. We are told that when a nerve is severed or otherwise rendered functionless the muscles which it supplies hang flaccid, like hammocks from their attachments; waste and toxic products accumulate within their substance; fatty degeneration takes place; and, finally, if untreated, conversion more or less complete into fibrous tissue occurs; so that by the time the nerve has regenerated the muscle has lost all contractile power. Our object in treatment is therefore to maintain the nutrition and contractility of the muscle while the nerve is undergoing the process of regeneration. The sudden sharp contraction elicited by the rhythmically reversed galvanic current seems to me the ideal one for the removal of these waste and toxic products and for the maintenance of the muscular tone. We follow out the technique advocated by Bergonié for the treatment of infantile paralysis, and feel satisfied that we are in good company in following the lead of a teacher to whom electro-therapists owe so much. This treatment is so simple in its application, the apparatus needed is so inexpensive, and the results obtained are so good that it is deplorable that it is not more generally adopted at the smaller hospitals and convalescent homes. We have all seen limbs permanently disabled by neglect or inefficient electrical treatment the function of which could have been more or less completely restored if the proper methods had been followed. At nearly all hospitals and convalescent homes, however small, there is usually some form of apparatus for the supply of the continuous current, and only the addition of a clockwork metronome, costing about £2, together with a little instruction and occasional supervision of those in charge, is needed to ensure the recovery of many cases which, if neglected, will become a permanent charge upon the State.

I do not intend to deal with the subject of muscle and nerve-testing beyond laying stress upon the importance of associating the examination of the voluntary movements and sensation with the electrical reactions. Although we are all ready to admit the importance of this in theory, in practice we are apt to neglect it, unless we methodically associate them. In order to coördinate these observations, and to keep a record of them, we make use of a card. (The card was exhibited.) Bergonié's apparatus for the production of electrically provoked exercises we find most useful in restoring the tone of muscles wasted from disuse or slight nerve disturbance. We have recently been extensively using it with great success for the development of the quadriceps extensor after surgical removal of the semilunar cartilage.

Electrotherapy, like other methods of treatment, has usually failed in most cases of severe shell shock; many of these cases have very marked electrophobia, and electrical treatment then tends to aggravate their symptoms. There is, however, one class of nerve shock in which the Bergonié treatment generally results in a speedy cure. These are the cases which are under the fixed impression that they have lost all power in their lower limbs, and are unable to walk or even to stand up. One or two vigorous séances on the Bergonié chair are usually sufficient to convince them that there is still some contractile power in their muscles, and they are then soon able to stand and walk without assistance.

The chief indication for the use of diathermy in the treatment of the wounded is the existence of severe pain; unfortunately this is an indication which frequently arises.

The hyperæmic changes induced in the tissues by the passage of the diathermic current are of great value in the treatment of conditions where the local nutrition is at fault. The high rate of oscillation of the electrons in the tissues excites tissue drainage as well as producing frictional heat. It has several times been pointed out how completely and efficiently diathermy fulfils the indications for treatment in trench feet, relieving the pain when all other means have failed, reducing the stasis and congestion of the parts by tissue drainage, and diminishing to a minimum the loss of tissue. The results claimed for diathermy in this treatment have now been confirmed by many workers.

Volkmann's ischemic contracture exhibits symptoms which seem to indicate the application of diathermy. I have treated three such cases by this method. Two were very advanced when they came under my care, and were not in the least benefited. The other was an early case and the progress of the disease was arrested, and very marked improvement took place.

Two interesting cases of local tetanus have shown marked symptomatic improvement under the influence of diathermy. One of these was sent to me by Major A. F. Hurst to have his reactions taken. The muscles of the left shoulder were rigidly contracted, exhibiting an almost incredible degree of stony hardness. To take the electrical reactions of muscles in such a condition was clearly an impossibility. The patient had previously taken an anæsthetic very badly, so I decided to try the effect of diathermy. The application of this current resulted in a degree of relaxation far greater than that obtained from any other application, and even slightly greater than that obtained some days later from complete anæsthesia. The relaxation lasted for some hours and rendered the taking of the reactions quite a simple matter.

The other case occurred in the muscles of an officer's leg. Diathermy was regularly applied, and definite relief was experienced after each treatment. I received recently the following letter from this officer, in which he very clearly describes his symptoms and the effect of the treatment:—

15/11/16.

DEAR MAJOR TURRELL,—I have been meaning to write to you for some time, as I knew you would be interested to hear how I was getting on. Your letter has just been received, and I am only too happy to give you any information I can with regard to my leg.

I was wounded in the left leg on Oct. 13th, 1915, by H.E. shell, and arrived at Oxford on the 22nd. There was no operation, as the surgeon in charge did not consider it advisable to remove the pieces of shell; my leg seemed to be getting better and after about a month I was able to hobble round with sticks. My foot at this time used to swell a great deal towards night, and the foot seemed then to gradually stiffen up with violent pains at intervals; this gradually spread up the whole leg to about the knee, and I was compelled to take to my bed again. The pain at times was very bad, similar to a very bad attack of cramps, and then my leg became rigid and stiff, and at other times used to get horrible jumps and it was impossible to keep it still, and whenever the doctor or nurse looked at it, it used to stiffen up at once. The night seemed to be the worst, and consequently I got very little sleep. I often had to get up in the middle of the night on crutches to try and obtain relief, my leg was so cramped and sore. It was about this time that you first visited me and prescribed a course of electric treatment for my leg, and I shall never be able to thank you enough for the relief it gave me. I cannot remember the names of the different treatments, but the first one—diathermy or heat pads—certainly relieved the pain, and after the first two or three visits to you I got immense relief. I never looked back after this, and although the progress was slow I gradually lost all pain and was able to get sleep at night. The nervous jumps slowly disappeared and my leg became gradually normal except for contraction of the tendons. I was unable to straighten my ankle or knee, and it was thought at one time that my tendo Achillis would have to be severed. Gradually the knee straightened and I was able to get my heel to the ground. I was for some time on crutches and was able to leave the hospital on Feb. 5th, 1916, walking with sticks. I am now able to walk comfortably, but am unable to flex the ankle more than at right angle to my leg. The circulation is not very good and I feel anything tight round my calf. I am still getting Boards and have not been passed fit for overseas yet.

This officer was treated by ionisation on Dec. 6th and 7th, 1915; diathermy from Dec. 7th to 22nd, 1915, also occasionally static breeze; and ionisation, chlorin ion, to relieve contraction, from Dec. 29th, 1915, to Feb. 4th, 1916.

Of course, the treatment of such cases by diathermy is purely symptomatic, and in no way replaces the need for

antitoxic serum or other specific treatment. The treatment is, nevertheless, a very important one in these cases, both on account of the immediate relief which it affords and also on account of its tendency to prevent the permanent muscular shortening or contraction which has been found likely to result in these cases.

In relieving the pain of sciatica, neuritis, lumbago, and many like conditions diathermy is of the greatest value. In dealing with sciatica I have practically abandoned all other methods of physical treatment, early cases quickly are cured, some old-standing ones require much perseverance and patience, and occasionally one comes across a case which shows no improvement. Electrotherapy would be an uninteresting and a tame proceeding if we had all successes and no failures. The mistake which I have most often made in dealing with these obstinate cases has been in chopping and changing from one treatment to another. I believe that if sciatica will not yield to diathermy no other electrical method will benefit it, unless, perhaps, radiotherapy. As a preliminary to the passive movement of stiff joints the analgesic effect of diathermy and its influence in diminishing the spasmodic contracture of neighbouring muscles are of great service.

In no other electrical modality is technique of such importance as in the application of diathermy. The chief points to pay attention to are:—1. To apply the current slowly. 2. To be careful to apply it in the right direction and over the right area. 3. To continue its application for a sufficient time—a minimum of 15 to 20 minutes. 4. To obtain as great a heating effect as is consistent with safety. 5. To select the size of pad and electrode suitable for the extent of area to be treated.

It is quite easy to treat cases by diathermy without producing any benefit; it is also possible by correct technique to cure these cases. For instance, take that most troublesome complaint, coccydynia. By following the routine method, and placing one electrode on the abdomen and the other over the sacrum and coccyx, and giving the usual dose, probably no improvement will result. On the other hand, by adopting a more intensive method most cases can be cured. The patient lies on his abdomen, a cylindrical metal electrode is placed in the rectum, and a small pad and electrode about the size and shape of the coccyx is placed over that bone, and the current slowly administered to the toleration of the patient. I have personally cured five or six cases in this way; the last was a coccydynia in a wounded soldier following a contusion of the spine.

The high-frequency vacuum tube we find useful in some conditions of trench feet and other painful conditions; ultra-violet radiation is to some extent replacing the use of this modality in our work.

One of the most useful and indispensable forms of apparatus in the treatment of wounded soldiers is the static machine. The equipment of no electrical department is complete which does not include an efficient instrument of this kind. The unidirectional current of the static machine, with its enormously high potential and its minute amperage, can be produced by no other form of electrical apparatus; and it is the possession of these specific properties which renders it capable of producing results in certain cases which are unobtainable by any other means. We know from our condenser testing that the vigour and amplitude of a muscular contraction depend chiefly upon the voltage used. In a healthy muscle with the condenser charged at 50 volts, we get a weak muscular contraction; with a condenser of similar capacity but charged at 100 volts, a stronger contraction results; and a more vigorous contraction still is obtained from a charge at 200 volts. Now with the Morton wave-current of the static machine the muscles to which the electrode is attached require a potential of several hundred thousand volts before a discharge can take place across the 7 or 8 inch spark-gap, which is often used. So vigorous and of such amplitude is the resulting muscular contraction that we are enabled by this method to free muscular fibres from involvement in scar-tissue by the force of their own contraction. So readily and accurately can the force of this contraction be regulated that, by alternately widening and approximating the discharging balls, we can make use of this current as a form of electrical arthro-moteur for the movement of stiff joints in the hands and feet, and as a means of breaking down slight adhesions. This method is especially useful for breaking down the adhesions which persist in trench feet after the subsidence of the acute and painful symptoms. In

the Morton wave-current these vigorous contractions alternate with periods of complete relaxation, and thus by a form of automuscular massage the stasis and congestion of recent sprains are removed, and the return of mobility and function is often hastened by several days or weeks. In the same manner, with suitable technique, the re-absorption of the fluid in synovitis of the knee-joint can be rapidly promoted. A full understanding of the *modus operandi* of this modality is necessary to enable us to appreciate in what a large number of cases, resulting from wounds and exposure, it is applicable. There is no form of electrical or other apparatus by the use of which quicker or more permanent results can be obtained. I hope that we shall presently hear Captain Humphris's remarks on this treatment, for on account of his much longer experience he is able to speak with far more authority on these matters than I am.

I have so recently read a paper on the ultra-violet radiation before this section that I do not propose to detain you with any remarks of mine on this subject, but we shall be very pleased to hear the experience of others with this treatment.

To summarise very briefly, the war services which electrotherapy can render to the State are as follows:—

1. A considerable number of those who would otherwise remain permanently unfit can be rendered fit for general military service.
2. The severe pain of many of those wounded or injured by exposure on military service can be completely arrested or greatly relieved by these methods.
3. Electrical treatment is of great service in many of the less serious cases, often effecting a speedy cure and a quicker return to the fighting line.
4. Electrotherapy, fully and efficiently developed, will result in a very considerable reduction in the amount paid for State pensions, and, what is far more important, will restore function to many crippled limbs.

The last point we have to consider is the personnel of the staff of the electrical department, and this, though perhaps the most important point of all, I must deal with very briefly. A great deal of the electrical treatment administered at many of the convalescent homes and smaller hospitals serves no other purpose than to bring the treatment into disrepute. One frequently sees, as I saw to-day, a patient with complete reaction of degeneration of the musculospiral nerve who had been treated in a perfunctory manner for five weeks with the faradic brush, with no other result, of course, than to destroy completely the patient's faith in all electrical methods. Under the present system with about two months' training and the possession of a small faradic battery anyone can become a so-called medical electrician, and practise as an expert the most specialised of all the medical sciences. I think that this condition of things could be largely remedied by appointing properly qualified electrotherapists to supervise and instruct in electrical methods in the different hospitals and convalescent homes in their area. Of course, the more important treatments, such as diathermy and the static, would have to be conducted at properly organised and equipped departments. But, nevertheless, under proper supervision and control an amount of work invaluable to the patients and the State could be performed in the auxiliary hospitals by means of ionisation and rhythmically reversed galvanism.

These suggestions are made in no carping spirit, but with a full recognition of the very valuable services which are being rendered by only partially trained nurses and masseuses, and they are made with an earnest desire to increase the usefulness of these ladies and to extend the benefits of efficient electrotherapy to regions which they have not yet reached. This section cannot fail to feel otherwise than much gratified at the development which has occurred in electrotherapy during this war and at the increased recognition which it is daily receiving.

DONATIONS AND BEQUESTS.—Among other bequests the late Mr. Peter Brock, of Freesbank, Cumbuslang, has left £1500 to the Western Infirmary and £1250 to the Royal Infirmary, Glasgow.—The late Edward George Henry Montagu, eighth Earl of Sandwich, has left £1000 each to the Huntingdon County Hospital, the Dorset County Hospital, and the Royal Hospital for Incurables, Putney.

FRAUD AND SKIN ERUPTIONS.

By SIR JOHN COLLIE, M.D. ABERD.,

PHYSICIAN, COUNTY OF LONDON WAR HOSPITAL, EPSOM.

LESIONS of the skin may be produced in many ways; even simple rubbing with a wet finger, if persistently carried out, will raise an erythema. This, however, is a somewhat tedious method, and it is sometimes found that friction with the moistened end of a match or persistent pricking with a needle is resorted to, since these plans are quicker and more efficacious. Other methods are the application to the skin of a too hot water-bottle, of carbolic acid (frequently employed since it is very easily obtained), or of agents such as cantharides, mustard, "mustard leaf," or croton oil, all of which blister and may even produce superficial ulceration of the skin. More serious injuries, deep ulceration and gangrene, which are sometimes found, are generally produced by the application of strongly caustic acids or alkalis. One feature of these skin eruptions is that often a succession of diseased areas arise.

Dr. McKendrick, of Edinburgh, has kindly sent me a note of the following case.

A girl who had undoubted syphilis and a secondary eruption was about to be discharged from the Edinburgh Royal Infirmary when a fresh crop of eruptions suddenly appeared which was not characteristic of the disease. It subsequently transpired that some of the areas were produced by pinching the skin with the finger-nails, some by rubbing and scratching, and others by the application of heat. The hands were tied up and the whole rash disappeared.

Seven years later the same girl was brought to the surgical X ray department of the same infirmary by the matron of a home for destitute girls, with a report that the girl had swallowed a large number of ordinary pins. X ray examination was negative, and Dr. McKendrick, who, fortunately, remembered the girl's face, and said so, obtained from her the confession that she had not in fact swallowed any pins.

The case betokens a peculiarly twisted mental attitude and a moral obliquity which is interesting.

Nature of the lesions.—These lesions appear suddenly and at irregular intervals; they may be single or multiple. There may be a simple erythema, bullæ, or shallow ulcers; in rare cases severe, deeply-cut ulcers are found, or even patches of superficial gangrene. They have the following characteristics:—

1. The condition produced is unlike any of the usual skin diseases.
2. According to the usual geography of factitious skin eruptions they occur in situations easily reached by the right hand of the patient, if she is right-handed, or on the opposite side if she is left-handed. Such situations, for example, as the front of the arm and the forearm, and the thigh and the leg are favourite sites. The area between the shoulder blades cannot easily be reached and this is generally found to escape.
3. They avoid the neighbourhood of the mouth, nose, ear, scalp, knees, hands, and the genital region. The soles of the feet are also avoided, as an eruption there would impede locomotion.
4. The lesions often have a characteristic aspect. Usually they run longitudinally—that is to say, in the length of the limb on which they are inflicted. The shape may be curious and suggestive. Ulcers, for example, may be perfectly circular, and in such cases have been produced, in the case of crude imitators, by the application of a coin soaked in some irritant; or, more rarely, they may take the shape of parallel scratches such as might be produced by a fork.

Eruptions following a straight line are unknown in dermatology. Any patch of dermatitis, therefore, which follows a straight line for any part of its margin is suggestive of fraud. A suppurating, angry dermatitis in a more or less straight line may be produced on the outer edge of the left forearm by the simple process of persistent friction by the right hand. It is well to remember that one is apt to be thrown off one's guard by a very inflamed angry-looking patch of inflammation; instinctively, from preconceived ideas and association, the appearance makes one think of disease. Many cases have been recorded where blistering has been produced by the simple process of cutting off a small piece

of a mustard-plaster and applying it to the skin. The straight lines tell their own tale.

5. The surrounding skin is significantly healthy.

6. The alleged sensation of the part is usually abnormal; either the patient complains loudly of excessive pain, even when touched lightly, or else she professes to feel no pain when the part is freely handled.

7. The lesions sometimes have a way of appearing to order. If, for example, the examiner says in the hearing of the patient: "I should not be surprised if in the course of a few days we find an ulcer in such-and-such a place," the probabilities are that later an ulcer in due course appears there. Cases have been described where lesions starting at the periphery of a limb and subjected to the control of an occlusive dressing, such as a plaster-of-Paris case, have appeared higher and higher up the limb as the occlusive dressing has been extended.

8. Much assistance can often be gained by smelling the eruption. The characteristic smell of many acids can be recognised, and the case diagnosed at once. Litmus paper will often reveal an acidity which will at once arouse suspicion, for the normal exudation of a skin disease is alkaline.

In cases which are caused by hysteria other signs, such as stocking anaesthesia, and so forth, can usually be elicited, and an important point to be remembered in all such cases is that they are usually associated with anaesthesia of the palate.

Aids to diagnosis.—The diagnosis will be assisted by a consideration of all of the above points. It should be remembered that occasionally where a strong caustic has been used a drop may run down the skin and leave a pear-shaped mark below the edge of the ulcer, which is lighter in colour and shows a less intense inflammation than the primary lesion. The application of a proper occlusive dressing will often be found useful and will clear up any doubt that remains.

Dr. Edward Stainer, of the Skin Department of St. Thomas's Hospital, has kindly supplied me with a drawing the exact size of what he calls the "tell-tale trickle tail" which occurred in the left arm of a young housemaid, and was obviously produced by an acid. The central circular area was in a blistering condition with detached epithelium, surrounded with an irregular, erythematous border, the tail of a comma, as it were, representing the overflow of the acid.



Speaking generally, the flattened, sliding epithelium of a large blister in which there are no true pemphigus-like blebs, ought to make one suspect the possibility of artificial production.

Skin lesions, whether genuine or artificial, are often masked by a secondary dermatitis, which may be set up by scratching and the ingress of pyogenic organisms; these should be got rid of by the application of compresses and other suitable remedies. The character of the lesion depends not only upon the chemical employed to produce it, but upon the mode of its application; for instance, carbolic solution in certain strengths is an irritant, pure carbolic is an anaesthetic; an application of the former will, therefore, produce a dermatitis, the latter will whiten the tissues, and if the application is sufficiently strong will produce gangrene.

Many years ago, when I was in general practice, I was attending a patient for rheumatic fever. She complained bitterly of two painful spots in each buttock. Two small patches of whitened skin presented themselves, and I at once said, "These are burns with pure carbolic acid." The answer to the question whether a bed-pan was being used was in the affirmative. The trained nurse who was in attendance admitted, upon my putting it to her, that she was in the habit of disinfecting the bed-pan with carbolic solution. The fact that some pure carbolic had been unintentionally left on the utensil was perfectly obvious, but was denied. My patient, however, a woman of much intelligence, required no explanation. The nurse, who had had her lesson, was forgiven, and there the matter ended.

It is often very difficult to discover the means adopted to produce the artificial lesions, for obviously the patient makes

it his business to conceal in every possible way the fraud which he knows he has perpetrated. A curious case occurred recently in which a circumscribed area of the skin in the forearm presented a suppurating pustular eruption upon an indurated base. The patient was a nurse in a hospital. The case presented many unusual signs, but the true nature of it was soon revealed (as it is in most cases when under hospital supervision) by the fact being disclosed that the nurse was a morphomaniac. She had inserted the hypodermic needle repeatedly within a small area, with the result described.

A somewhat rare but very interesting form of skin disease produced by artificial means is sometimes brought about by striking the skin vigorously with a hard brush, which produces a purpuric rash which has been called "hairbrush purpura."

There are physiological and psychological reasons which will suggest themselves to medical men why reasonable sane girls are found wilfully to produce troublesome, irritating diseases; but here we are more concerned with the class of case in which pecuniary advantage is likely to be gained. Sequeira states that the payment of £5 to a servant employed in a large institution as compensation for dermatitis, alleged to be caused by irritant soap and alkalies, led to a crop of similar cases coming under his notice.

As a rule, an artificially produced skin lesion can be fairly easily diagnosed; but, as Dr. Norman Walker reminds us, it is one thing to diagnose a dermatitis artefacta and another thing to prove it. In his "Diseases of the Skin" Sequeira gives the following note about the case of a young girl where the lesions were obviously self-inflicted:—

"The illustrative photograph shows the leg of a young girl in whom the lesions were remarkable for their arrangement in sets of three, all of the same length and equidistant. They consisted of rather deep longitudinal abrasions covered with dried blood and small crusts formed by dried exudation. Recent lesions and the stains of older abrasions are well shown in the photograph. The patient had complete anaesthesia of the palate and right hemianæsthesia affecting the face, limbs, and trunk with the exception of a spot the size of a shilling over the right eyebrow, where sensation was normal. It was suggested that the excoriations were produced by a three-pronged fork, but scratching by the finger-nails might have caused them."

Dr. R. O. Adamson, of Glasgow, reports the following interesting case.

The patient was a young lady of more than usually attractive appearance in whom he detected nothing suggestive of the morbid tendencies which she exhibited. The illness began with "weeping eczema" of the chin, which was followed by a similar condition on cheeks, forehead, nose, neck, arms, and later the thighs and legs. The condition remained in spite of incessant treatment, and often appeared in places covered by dressings and bandages. Each patch was at first an acute erythematous flush which rapidly suppurated and healed by the usual crust. Their shapes were various, sometimes round, often square, and not infrequently linear. They healed rapidly, but the feature of the illness was the succession of diseased areas. The condition made the young lady a prisoner in the house for many months, and this was borne with remarkable patience. Dr. Adamson remarks: "I confess the idea of the complaint being factitious never occurred to me. Those who have met with such cases for the first time may understand my want of imagination. I was supported in my sympathy for my patient by a skin specialist who diagnosed dermatitis herpetiformis."

In due course the lady went to a well-known spa and was treated by two or three doctors with no benefit. Eventually the case was diagnosed by a well-known dermatologist as dermatitis artefacta. A nurse was now sent in to watch the patient, but as after two months nothing was detected, fresh patches appearing, the friends of the patient were, with some difficulty, induced to send the lady to a nursing home where she was never left alone night or day, and was never allowed to leave the room for any purpose. On the fourth day a movement under the bedclothes led to the detection of the lady's hand holding most unsuspiciously a handkerchief in which was a small ragged piece of pumice-stone. When deprived of this her cure was rapid.

Two years later the lady complained of much gastric pain and vomiting of blood. There was plenty of blood, but it clearly had never been in the stomach, for it lay as a pinkish layer at the bottom of a vessel of vomited milk. Notwithstanding her attitude was one of apparent *bona fides*, after a few days' careful watching she was informed that her illness was a feigned one, and so the matter ended.

A year later obstruction of the bowels was feigned, and constipation lasting a month was averred, the falsity of which was proved by another short sojourn in a nursing home.

Unfortunately, however, we often have to deal with the following much more difficult condition. Pre-existing skin disease is sometimes wilfully aggravated and kept up by patients who derive a monetary benefit from continuing disability. It is an easy matter, for instance, for one whose hands have become inflamed as the result of using at his work too strong a soap or too strong a solution of soda to keep up the eruption by the occasional surreptitious application of the irritants which have in the first place produced it. How often does one see an old ulcer kept going when, if properly treated, it should have healed. The only way to deal with such cases is either to apply an occlusive dressing, when this is possible, or to arrange for the patient to be under proper medical supervision in an institution.

Trade dermatitis.—In certain trades where irritants have to be habitually used dermatitis frequently occurs. The most familiar examples are the erythematous, raw-looking hands of those who habitually have to use strong alkaline solutions—for example, washerwomen, barmaids, &c. Hairdressers who use alkaline shampooing fluids sometimes suffer. Those who use aniline dyes, french polishers who use bichromate of potassium, grocers who have to handle sugar, carpenters working with teak and rosewood, tanners using arsenic, surgeons and nurses using disinfectants, painters using lead, masons working with silicate, photographers, and workers with chlorine, tar, and paraffin are also liable to disease. Bakers are subject to a special form of eczema, the result of constantly mixing dough. This used to be called "baker's itch," which was probably a form of scabies, the result of the introduction of an acarus from an inferior sort of sugar with which flour used to be adulterated. A worker may have been engaged for years in a particular occupation without his skin suffering, but from some indefinite condition, such for instance as a lowered vitality, or it may be the accidental use of a stronger solution than usual, the skin resistance gives way, and a dermatitis is set up. Even when the condition has thoroughly healed there is sometimes a tendency to recur in the event of a continuous exposure.

The characteristics of the lesions produced are that they only appear in the portions of the body exposed to the action of the caustic, and are, therefore, almost entirely confined to the hands and forearms. This is not, however, an absolute rule, for if the worker is engaged with caustics in the form of a fine powder or a vapour, other parts of the body, more especially the axillæ and groins, may be affected. It must be remembered that the clothing may become soaked in the irritant, and unexpected parts of the body may become affected. For instance, a case of acute eczema was recently found on both legs in a man whose occupation was that of cleaning down motor-cars; he used a crude form of paraffin, and his trousers had become soaked with it.

The various trades are responsible for an infinite variety of skin lesions. As a rule, they start with a simple erythema, followed by vesiculation, and eventually an eczematous condition is set up. When the process is chronic, we get the heaping-up of epithelium with formation of hard, horny skin, in which painful cracks are likely to occur. The backs of the hand, the tips and sides of the fingers, and the nails are usually first affected, the disease spreading up the arms as far as the irritant is able to obtain access. The difficulty of many of these cases is that they are so frequently masked by the secondary infection caused by scratching and the ingress of pyogenic organisms. In a suspicious case particular attention should be paid to the ends of the fingers and the finger-nails; and microscopic examination of the epithelium will often repay the searcher.

Dermatitis from plants.—Many plants, either from the presence of irritating hairs or from their secreting an irritating oil, have the power of producing dermatitis in people who handle them. The most familiar example of this is the common stinging-nettle, but the primula family, especially *Primula obconica*, is particularly prone to do this, as also are *Rhus toxicodendron*, *Rhus venenata*, *Rhus diversiloba*, and *Laportea gigas*. Certain bulbs, also, such as the scilla, produce an artificial dermatitis. *Primula obconica* is a poisonous plant which closely resembles the English primrose; its leaf contains a number of spines which readily attach themselves to the skin and set up an acute inflammation. Many people, however, seem to have an immunity from the poisonous

effects. *Laportea gigas* (a tropical stinging-nettle) has a fruit like a raspberry, and the small hairs on the stems and leaves seem to have the power of setting up a dermatitis. The eruption produced by these plants, as a rule, starts on the lateral surfaces of the fingers and spreads to the back of the hand, involving the front and back of the wrist and front and back of the forearm. It closely resembles erysipelas, for which disease it is often mistaken. The eruption consists, as a rule, of an erythema covered with closely packed vesicles and a considerable amount of subcutaneous swelling. It generally lasts from a few days to two, three, or four weeks.

Porchester-terrace, W.

A CASE OF MENINGOCOCCAL INFECTION WITHOUT INVOLVEMENT OF THE CEREBRO- SPINAL SYSTEM.

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THE following account of a case coming under my care may prove of interest in view of the fact that reports of instances of meningococcal infection other than meningeal are so far scarce.

A private in the Royal Field Artillery, aged 19, was admitted to hospital on March 11th, 1915, with the history of having four days before (following a period of some days during which he had been suffering from a "cold") become ill suddenly with shivering, headache, and generalised pains in the back and limbs, and a feeling of feverishness. He took to his bed, and in the course of a day or two a rash began to come out on the body. The acute symptoms persisted and were accompanied by an elevated temperature. A provisional diagnosis of typhus fever was made and his removal to hospital was ordered. His condition on admission was as follows: Temperature 104° F., pulse 120, respirations 24. The patient appeared acutely ill and complained of pain all over the body. His expression was quite intelligent, though his eyes were somewhat heavy and suffused and there was slight conjunctival discharge, and he was able to give perfectly coherent answers to questions regarding his illness. A rash was present which consisted of three elements—erythematous blotches, petechial spots, and very shallow vesicles which contained blood. The erythematous spots were distributed over the trunk and limbs in a manner similar to measles, but they were not raised above the level of the skin. The petechial spots were confined to the arms and legs, and occurred as minute purplish spots scattered through the erythema and showed a distinct tendency to be collected into small groups. The vesicular elements were entirely confined to the legs and were few in number, though some were as large as a sixpence; they were formed by the lifting of the superficial layers of the epidermis by the effusion of a thin layer of blood; in every case they had become dry, and on breaking through the surface dried blood could be scraped out from underneath. The pulse was rapid and bounding, but of good quality and regular. The cardiac sounds and dullness were normal. The pulmonary area was everywhere resonant, and no alteration in the breath sounds was to be heard, nor were any adventitious sounds present. The tongue was lightly coated and the throat slightly reddened. Examination of the abdomen revealed no abnormality. The stools were normal, though there was a tendency to constipation. The patient's mental condition appeared quite normal. The tendon reflexes showed no abnormality and there was no post-cervical stiffness and no Kernig's sign. The urine contained a haze of albumin, but no blood or tube casts. The diagnosis of typhus fever was discarded owing to the clearness of the patient's mental condition and the fact that, though the rash simulated the typhus exanthem fairly closely, there were distinct points of difference.

The subsequent course of the case was as follows:—March 12th: Temperature 104°–101° (falling). The rash was still bright; the general pain persisted; the mental condition remained quite clear. Lumbar puncture was performed and a clear fluid obtained, which was not under undue pressure and which remained free from clot, and was found microscopically to contain only normal cells. 13th: Temperature: morning 99.2°, evening 99.6°. Rash beginning to fade on the trunk but still bright on the arms and legs. Pains less severe. 14th: Temperature: morning 98.8°, evening 98.6°. Rash faded on trunk but still present on

limbs. Pains entirely disappeared. 15th: Temperature: morning 98.6°, evening 97.4°. Rash fading on arms. 16th: Temperature: morning 98.4°, evening 98.6°. Rash faded on arms but still present on legs. 17th: Temperature: morning 97.4°, evening 98.2°. Erythematous elements of rash on legs faded, but petechial and vesicular elements still present. 18th-20th: Temperature normal. Gradual fading of remnants of rash on legs until they had quite disappeared. From this time on the patient had an uninterrupted convalescence, and was dismissed well on April 30th, 1915.

From the foregoing account it will be seen that the case presented the features of an acute febrile condition accompanied by a very definite exanthem, the acute symptoms ending by crisis on the sixth day of illness.

While searching for a possible diagnosis I remembered two incidents which helped to turn my investigations into a particular channel, one being that a short time previously a patient from the same barracks had been admitted to hospital suffering from cerebro-spinal fever in the fulminant form, and the other that in a certain case of cerebro-spinal fever I had observed a rash which was identical with the one above described, the blood-filled vesicles being particularly well marked. With these facts in view I proceeded to investigate the properties of the patient's serum, and its agglutinating powers were tested against an emulsion of the meningococcus.

Three parallel experiments were carried out with serum—(A) from a definite case of cerebro-spinal meningitis, (B) from a normal individual, and (C) from the case under investigation. Dilutions of the sera of 1-25, 1-50, and 1-100 were used, and the amount of agglutination at the end of 24 hours was noted with the following result:—

| Case. | | Dilutions. | | |
|-------|----------------|------------|-----------|---------|
| | | 1-25 | 1-50 | 1-100 |
| A | Agglutination. | Marked. | Marked. | Marked. |
| B | " | None. | None. | None. |
| C | " | Marked. | Distinct. | None. |

The result seemed to indicate that the patient had some specific agglutinins present in his serum, but it was thought that some further proof of a meningococcal infection was necessary because of the fact that the agglutination reaction in the case of this organism is not altogether satisfactory. Consequently a further experiment was undertaken to test for the presence of immune bodies by the deviation of the complement method.

In this experiment also three sera were tested simultaneously—(A) from a case of cerebro-spinal fever, (B) from a normal individual, and (C) from the case under investigation. The antigen used was an emulsion in sterile saline of an 18 hours' growth of meningococci on glucose-bouillon serum. Fresh guinea-pig's serum was used for complement and was found to have a minimum hæmolytic dose of 0.004 c.c. for 0.5 c.c. sensitised ox-blood corpuscle suspension. The amounts of the constituents used in the reaction were: Antigen, 0.3 c.c.; patient's serum, 0.025 c.c., 1, 2, 4, 6, 8, &c., M.H.D.'s of complement in successive tubes. A half c.c. of sensitised ox-corpuscle suspension was used as indicator of the presence of free complement. The following results were obtained:—

| Serum. | Number of M.H.D.'s of complement absorbed in presence of meningococcal emulsion (0.3 c.c.). |
|----------------|---|
| A (0.025 c.c.) | Ten |
| B " | One. |
| C " | Fourteen. |

These results seemed to prove conclusively that the patient had specific antibodies to the meningococcus in his serum. Attempts were made to obtain the organism in culture from the naso-pharynx, but they were unfortunately unsuccessful, possibly owing to the fact that they were made too late in the course of the illness.

In reviewing the facts obtainable regarding this case there seems to be little doubt that the patient had suffered from an infection by the meningococcus without involvement of the cerebro-spinal system and that the case falls into the so-called septicæmic class of cerebro-spinal fever, as described

by Mr. A. Lundie, Mr. D. J. Thomas, and Mr. S. Fleming in one of their articles on the disease.* A special point of interest is the fact of the occurrence of a rash the character of which called attention to the nature of the infection, for, had the rash been absent, the symptoms alone would have justified a diagnosis of a simple chill or influenzal attack and the true nature of the infection would have been missed.

A case of this kind must be regarded as a distinct menace to contacts, as there is no guarantee that in a secondary case the infection might not lodge in the cerebro-spinal system and give rise to the much graver type of the disease. A more general use, wherever possible, of serological methods of diagnosis in suspicious cases would enable such sources of danger to be appropriately dealt with.

ON A RAPID METHOD FOR THE CULTURAL DIFFERENTIATION OF THE TYPHOID AND PARATYPHOID BACILLI A AND B.

REPORT TO THE MEDICAL RESEARCH COMMITTEE.

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AND

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(From the Biochemical Laboratory, Cambridge.)

IN the spring of 1915 our attention was attracted to certain bacteriological problems by a conversation with a pathologist recently returned from a base hospital in France. We were impressed by him with the desirability of shortening the time at present required for the differentiation by biological reactions of the organisms responsible for the typhoid and paratyphoid fevers, and of investigating the bio-chemistry of these bacteria. This reports deals with the method we have finally adopted for the differentiation of *B. typhosus*, *B. paratyphosus* A, and *B. paratyphosus* B (subsequently called T., A. and B. respectively), as well as certain considerations suggested by our experiments.

We first attempted to differentiate the organisms by a determination of the final hydrogen-ion concentration reached by them in media containing carbohydrates. We thought it possible that this final concentration might be characteristic of a given organism rapidly attained and independent of the nature of the medium, and also that the method might be applicable for the recognition of closely allied members of other groups. We therefore grew the various strains we were studying in media containing glucose, and determined the hydrogen-ion concentration by the electrical method, after various periods of incubation. The tubes were steamed for 20 minutes before the readings were taken.

The potentials were measured by duplicate sets of apparatus, the chain employed being:—

PtH₂ | fluid | saturated KCl | HgCl₂Hg

The type of calomel cell and electrode was similar to that described by Barendrecht.¹ Potentiometers and high-resistance mirror galvanometers by Tinsley² were used and found to be extremely satisfactory. The readings were taken at a temperature of 20° C., which was maintained by an air thermostat heated and controlled electrically. A special method was devised for checking the readings as well as the potentiometer box itself. This method necessitates the use of twin electrodes as well as a multiple key which will be described in a later communication.

At first our results led us to believe that the problem was a relatively simple one, for on a particular medium we got constant results and a sufficient difference of potential to enable us to distinguish the organisms in question. This difference was 10 to 20 millivolts, which is beyond the limits of the experimental error of the electrical method. However, we soon found that the final hydrogen-ion concentration is in some way dependent on the non-carbohydrate content of the medium. This is not in agreement with the conclusion of

* Brit. Med. Jour., 1915, i., 836.

¹ Biochem. Jour., ix., No. 1, p. 68, March, 1915.

² Eldon Park Works, South Norwood, London, S.E.

Michaelis and Marcora,³ who considered that the final hydrogen-ion concentration reached by *B. coli* when grown on "bouillon," containing a sufficient amount of lactose, was a physiological constant for that organism, independent of the initial reaction and of the lactose content.

Whilst our work was in progress papers were published by Clark⁴ on the final hydrogen-ion concentration reached by *B. coli*, and by Clark and Lubs⁵ on the differentiation of various types of *B. coli* by the use of indicators. They state that the final hydrogen-ion concentration varies slightly according to the buffer content of the medium, but they claim that their results are, on the whole, in agreement with those of the German authors. Our estimations of the final reaction reached by *B. coli* upon glucose and lactose showed a considerably higher degree of acidity than that recorded by any of these authors. We were at a loss to account for this difference until we found that the final concentration reached is dependent in some way on the quality and quantity of the nitrogenous constituents of the medium. With certain media we have obtained a final P_H as high as

those published. This effect of the nitrogenous constituents has very much delayed our progress. It is so remarkably subtle that using one sample of Witte's peptone constant results could be obtained, but with a different sample the order of the final acidities might almost be inverted, changing, for instance, from $B > A > T$ to $B = T > A$.

It is this lack of uniformity which, as stated elsewhere, led us to attack the problem of the preparation of a standard nutrient medium. In this we trust we have succeeded, and we have already published a description of our "tryptic broth" in this journal.⁶ This broth is prepared by digesting a solution of commercial casein with trypsin. The product is treated in a given way and brought to a definite hydrogen-ion concentration by a simple colorimetric process. Using this as a fluid medium, it was soon found that the hydrogen-ion concentration reached by a given organism is not quite so stable as on the ordinary nutrient media. A certain grade of acidity is rapidly reached and then the reaction tends to become less acid. This phenomenon was carefully investigated with different concentrations of glucose and of the casein digest. It is more marked in these casein digests than in any other media we have tried. This may be due to the fact that the reactions causing a decrease of acidity take place more readily with free amino-acids than with peptones or polypeptides. The chemical mechanisms involved in the alkali production are being investigated and will form the subject of a further report.

With low concentrations of glucose (0.1 to 0.2 per cent.) there is an actual reversal from an acid to an alkaline reaction as shown by indicators. One important factor in this process is the adequate supply of oxygen, in the absence of which the alkali production is inhibited. In test-tube experiments the rapidity and extent of the change are therefore dependent on the ratio of the diameter of the tube to the volume of medium employed.

During our work on these changes of reaction, using varying concentrations of fermentable sugars and of the casein digest, we have established the following facts:—

(1) *An acid reaction is produced rather sooner by B. (and B. coli) than by T. and A.* An experiment in which litmus was the indicator is given in a previous paper.⁷ With phenol-sulphone-phthalein as the indicator the change is seen earlier and is much more sharply defined.

(2) *When excessive production of acid is prevented by using low concentrations of glucose, the reversal to an alkaline reaction is most rapid with B. and slowest with A.* The fact that A. does finally render this medium alkaline is worthy of note, since on litmus milk A. gives a slight permanent acidity.

(3) *When incubated for 24 hours in "tryptic broth" containing 0.2 per cent. glucose, B. produces an alkaline reaction to phenol-sulphone-phthalein, whilst T. and A. give acid reactions.* This difference is so marked and so constant that we have adopted it as the basis of our method for the cultural diagnosis of B. from T. and A. It is conditional on the size of tube and volume of fluid specified in the description of the method given below.⁸

(4) *When incubated in "tryptic broth" containing 0.1 per cent. glucose for 24 hours, B. and T. cause an alkaline reaction to phenol-sulphone-phthalein, whilst A. gives an acid reaction.* The difference in reaction between T. and A. is, unfortunately, not quite sufficient to cause a change of colour to phenol-sulphone-phthalein or any other indicator, definite enough to differentiate all the strains. Certain organisms give colours which tend to be intermediate. This renders the method an unsafe one to recommend for routine work. We have abandoned it with reluctance after many trials with varying concentrations of glucose and digested casein and with varying incubation periods. None the less the difference in reaction between A. and T. on "tryptic broth" containing 0.1 per cent. glucose, incubated for 24 hours and steamed for 20 minutes is, when measured electrically, usually about 30 millivolts, and in our experience never less than 20 millivolts. Hence, we are of the opinion that the final hydrogen-ion concentration reached under these conditions is a biological characteristic of the above organisms.

For the separation of T. from A. in routine work we rely upon two well-known facts—the formation of gas in glucose and the rapid fermentation of dulcitol by A. and not by T. The usual difficulty of obtaining gas with A. seems to be overcome by the use of diluted "tryptic broth" (T/6),⁹ as we have shown in an earlier paper.¹⁰ We find that dulcitol is rapidly fermented by A. when grown in T/6, with phenol-sulphone-phthalein as indicator. Under the conditions specified below marked acidity is produced by A. in less than 24 hours, whereas on ordinary media with litmus as indicator definite acidity is not usually reached under 48 hours. The first effect of T. is to cause an increased alkalinity owing to the action of the organism on the nitrogenous substances present. This probably accounts for the length of time required to obtain an acid reaction.

We would like here to emphasise the value of phenol-sulphone-phthalein as an indicator for bacteriological purposes. The colour change takes place in the range of reactions corresponding to the optimum for most organisms. It is not readily decolourised, nor does it appear to inhibit growth. One of its greatest advantages over litmus as an indicator for acid production is the very small change in the reaction necessary to cause a marked change in colour. The indicator is lemon-yellow in acid solution and red or magenta in alkaline solution. Its range is $P_H = 6.8$ to 8.4 . We generally use 4 c.c. per cent. of a 0.04 per cent. solution.¹¹

Method of Differentiation.

We do not propose here to provide a complete scheme for the identification of T., A., and B., but merely a rapid cultural method of differentiating these from one another.

Two solutions are employed, a glucose solution ("G.") and a dulcitol solution ("D."). The former is used for differentiating B. from T. and A., since at the end of 24 hours B. is alkaline while the others are acid. The solution "D." differentiates A. from T., since at the end of 24 hours A. is acid and T. alkaline. The solutions required are as follows:—

Glucose Solution "G."

| | |
|--|-----------|
| "Tryptic broth" ... | 1000 c.c. |
| Phenol-sulphone-phthalein (0.04 per cent.) ... | 40 " |
| Glucose ... | 2 gm. |

Tube in 3 c.c. portions,¹² and sterilise by steaming for 20 minutes on three successive days. We employ tubes of $\frac{1}{8}$ in. diameter. This size must be adhered to in order to obtain the desired differentiation, for with a decrease of diameter the rate of alkali production is retarded, with an increase it is accelerated. This is due to the effect of the diameter of the tube on the surface area, and therefore on the supply of oxygen.

⁸ $\frac{3}{4}$ c.c. in tubes $\frac{5}{8}$ inch diameter.

⁹ That dilution of the casein digest (stock broth) which we call "tryptic broth" and which is made by adding two volumes of 0.5 per cent. saline to one volume of stock broth is conveniently designated by the fraction T/3. If this be diluted with its own volume of saline the dilution becomes T/6, the concentration indicated above.

¹⁰ THE LANCET, July 1st 1916, p. 9.

¹¹ To prepare this dissolve 0.4 gm. of the indicator (which may be obtained from Martindale, 10, New Cavendish-street, London, W.) in 20 c.c. of decinormal NaOH in a litre measuring flask. Shake gently till dissolved, add 800 c.c. of distilled water, 20 c.c. decinormal HCl, and make up to a litre with distilled water.

¹² We employ an automatic apparatus which rapidly delivers any desired amount, recently described by one of us in THE LANCET, Oct. 21st, 1916, p. 716.

³ Zeit. für Immunitätsforschung, Jena, 1912, xiv., 170.

⁴ J. Biol. Chem., 1915, xxii., 87.

⁵ J. Infect. Dis., July, 1915, xvii., 160.

⁶ THE LANCET, July 1st, 1916, p. 9.

⁷ Loc. cit., p. 10.

Dulcitol Solution "D."

| | |
|---|-----------|
| T/6 | 1000 c.c. |
| Phenol-sulphone-phthalein (0.04 per cent.) | 40 c.c. |
| Dulcitol | 2 gm. |

The diluted "tryptic broth" (T/6) must be accurately adjusted to $P_H = 7.35$ by the method described in our previous communication,¹³ before the addition of the dulcitol and phenol-sulphone-phthalein. Tube in 2 c.c. portions in tubes of $\frac{3}{8}$ in. diameter,¹⁴ and sterilise as before. A glass bead is usually added before sterilising to distinguish these tubes from "G." We also have ready tubes containing 0.5 per cent. sucrose and 0.5 per cent. lactose; also fermentation tubes containing 1 per cent. glucose. These sugars are dissolved in T/6, and phenol-sulphone-phthalein is added in the proportion mentioned above. Any other carbohydrate solutions required in the particular routine employed are advantageously made up in the same way.

After plates have been grown from faeces or other material in the usual manner, suspicious colonies are emulsified into a tube of glucose broth. This tube is then incubated for two hours. Two loops of this are then sown into a tube of "G." and "D." as well as the other sugars employed. These tubes are then incubated for exactly 24 hours at 37° C. The tubes are now inspected, and can be examined for motility if this has not already been done. Should the presence of T., A., or B. be indicated by the reactions of the lactose-sucrose and glucose fermentation tubes, the final differentiation can be decided by the reactions in "G." and "D." After 24 hours they are as follows:—

| Organism. | Solution "G." | Solution "D." | Glucose fermentation tube. |
|---------------------------|---------------|---------------|----------------------------|
| <i>B. typhosus</i> | Yellow | Red or pink | Acid |
| <i>B. paratyphosus</i> A | Yellow | Yellow | Acid and gas |
| <i>B. paratyphosus</i> B | Red or pink | (Variable) | Acid and gas |

The change of reaction undergone by B. in solution "D." seems to be variable, but this is of no importance, since its presence can be ascertained from solution "G." In some cases acidity is reached in the space of three or at most four hours, whereas in others so great is the capacity for alkali production during the initial stages that the dulcitol never affords sufficient acid to change the reaction. On the other hand, the behaviour of A. after the first 24 hours is quite distinctive, and we obtain confirmatory evidence of its presence by allowing the tubes to remain an additional 48 hours in the incubator. Under these circumstances we find that A. remains a bright yellow until the middle of the third day. By this time T. and B., as well as the large majority of the non-pathogenic faecal organisms, show distinct alkalinity.

We have not succeeded in finding a cultural distinction between *B. paratyphosus* B and *B. enteritidis* Gaertner. In this method, as in all others, the final test is agglutination against specific sera.

The reactions recorded in solutions "G." and "D." have been tested repeatedly with 36 strains of T., A., and B. (12 of each) collected from various pathological laboratories. All these strains have been found to agglutinate with their specific sera at dilutions of 1 in 500 or higher.¹⁵

Incidentally we might mention that a comparison was made of "tryptic broth" with veal broth for the preparation of the formalised antigens required for agglutination tests. The organisms were daily subcultivated for a fortnight. Under these conditions we find that "tryptic broth" yields uniformly better results than veal broth. If, however, a small amount of glucose (0.1 per cent.) be added to the "tryptic broth" the results are inferior to those with the veal broth. This suggests that the value of "tryptic broth" for the preparation of such antigens is due to its freedom from sugar.

In conclusion, we trust that the method of differentiation we have described, based on the hydrogen-ion concentration reached under definite conditions, may prove of value in rapidly demonstrating an additional characteristic of the typhoid and paratyphoid organisms; and, further, that the use of "tryptic broth" in the preparation of various media, especially those for the detection of acid and gas production, may help to simplify and accelerate the work of some bacteriologist.

¹³ THE LANCET, July 1st, 1916, p. 9.

¹⁴ Should the tubes be stored for any length of time care must be taken to prevent evaporation, which causes considerable changes in the relative concentrations, &c., owing to the small volume of fluid employed.

¹⁵ The Oxford "standard" sera were used for these tests. For the supply of these sera we are greatly indebted to the Medical Research Committee.

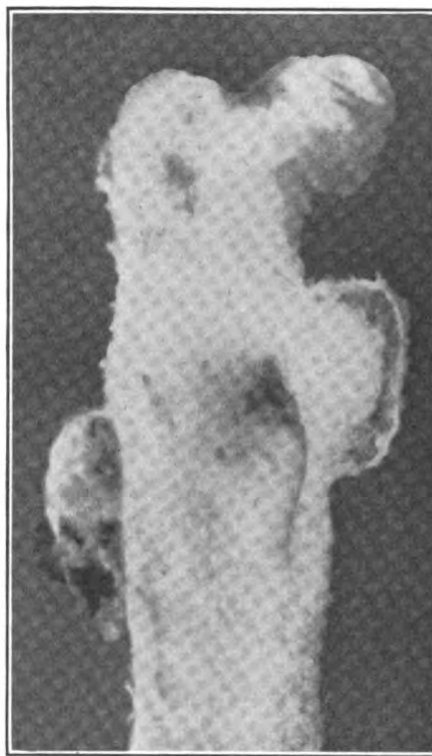
DIFFUSE MYXOCHONDROMA OF A LONG BONE.

BY MILNE MCINTYRE, M.B., CH.B. GLASC.,
DISPENSARY SURGEON, GLASGOW ROYAL INFIRMARY.

CHONDROMA is a common type of new growth occurring in early life. Peripheral and central varieties are recognised, the latter being the common one and situated mostly in the phalanges. The peripheral variety selects the longer bones, and of these the femur is one of the most frequently affected. There they form localised tumours, which probably spring from cartilage, so that with advancing age and the disappearance of cartilage from the long bones (the articular cartilage excepted), their occurrence late in life is unlikely.

The accompanying illustrations are of a specimen obtained from a female aged 65 years, who for seven and a half years complained of slight discomfort in the upper part of the right thigh without swelling, so far as she was aware, till shortly before her admission to hospital. At that time there was a visible fullness of the upper third of the right thigh, which felt as if due to a hard nodular enlargement of the femur, in the neighbourhood of the great trochanter. Passive movements at the hip-joint were not impaired, the temperature was normal, the patient's past history was negative, there was no evident metastasis, and the general health was unaffected. Her single complaint was the increasing discomfort, amounting at times to actual pain, in the upper part of the right thigh.

FIG. 1.



Diffuse myxochondroma of femur. The bone is seen in section after longitudinal bisection.

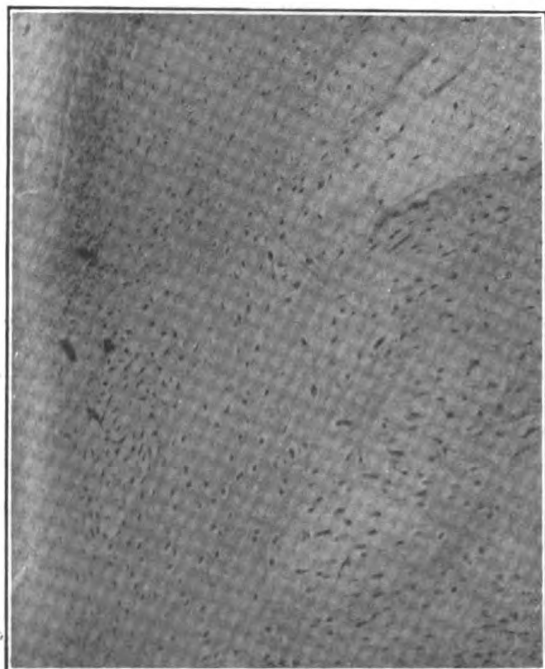
On the X ray plate general enlargement of the upper third of the femur was evident, consisting of tissue less dense than the imperfect shell or case of compact bone. It appeared to be a central sarcoma, causing expansion with thinning of the compact bone, for which the limb was disarticulated at the hip. In commencing the operation an incision was first made into the tumour, when a hæmorrhagic friable tissue escaped, supporting the presumption that the condition being dealt with was as diagnosed.

Macroscopic appearance.—The extent of involvement of the femur was greater than appeared from the X ray plate. Superficially, the growth involved the circumference of the

femur, from the level of the small trochanter to the junction of the upper and middle thirds. Due to infiltration by the tumour, the muscles were difficult to separate. At the upper limit there was a ring of nodules, varying in size from a chestnut to a crab-apple, firm in consistence, with softer areas, and composed of glistening cartilage-like tissue. The softer areas contained clear mucoid-like material. The surface of the remainder of the femur, from the neck to within two inches of the condyles, was roughened with the same cartilage-like tissue. The cleaned femur was frozen and bisected in the coronal plane. As appears in Fig. 1, each half resembles a dagger, a line about the level of the small trochanter forming the transverse piece. The medullary cavity, from the head to within two inches of the lower extremity, is occupied with the same cartilage-like tissue. Haemorrhagic areas and areas of myxoma-like softening are scattered throughout. The aforementioned nodules or bosses have a limiting wall of fibrous tissue, and the compact bone is generally thinned, but in the neighbourhood of the bosses is mostly absent.

Histology.—The tumour is a myxochondroma. In Fig. 2, which is a section of one of the nodules, the majority of the cells are small, fusiform, and stellate, with fine processes, lying in a homogeneous matrix which stains bluish. Towards the periphery (left of the illustration) there are typical capsulated hyaline cartilage cells. The central parts consist of myxomatous tissue, with firmer areas which are cartilaginous. There is a limiting capsule of fibrous tissue, from which remnants of trabeculae extend inwards, and underneath the capsule are here and there a few calcareous granules and small areas of commencing calcification.

FIG. 2.



Diffuse myxochondroma of femur. Section of one of the nodules.

Commentary.—The new growth, we may fairly presume, was primarily a chondroma which had undergone myxomatous degeneration. The condition is an interesting rarity for two reasons—first, because of its diffuseness as a chondroma; and, secondly, because of its occurrence in a patient so advanced in years. For these reasons the condition was clinically unsuspected, and I have been unable to find an analogy in the literature of affections of long bones.

Summary.—Chondroma undergoing myxomatous degeneration occurring in a patient aged 65 years. For a chondroma the tumour was unusually diffuse. It simulated and was diagnosed central sarcoma of bone. The extent of the growth was considerably more than appeared on the X ray plate.

I am indebted to Professor J. H. Teacher, who kindly examined the sections and concurred in the above description.

OCULAR VERTIGO.

By T. E. HARWOOD, B.A. OXON., M.B., CH.B. EDIN.,
RESIDENT OPHTHALMIC OFFICER, THE KING GEORGE HOSPITAL, S.E.

THE equilibrium of the body depends upon the coördinated action of various groups of muscles. Afferent impulses from certain peripheral organs convey the necessary information to the cerebellum, and the communications between the cerebellum and the cerebral motor-cortex secure the contraction of the required muscles. Vertigo is a consequence of insecure equilibrium, and may therefore result from either a central or a peripheral defect. The eyes are not the least important of the peripheral organs by means of which we gain information as to our position in space. They may give us fallacious information, either because they have to deal with abnormal surroundings or because they are themselves in some way abnormal. Ocular vertigo may result in either case, and is all the more probable when the two conditions are combined. The giddiness caused by looking down from a height or by staring at rapidly moving objects is an instance of the first; that caused by the paralysis of an external ocular muscle or a partial opacity of one of the various media is an example of the second.

In the instances quoted vertigo is almost entirely ocular, but in the great majority of cases it is so more indirectly. The perfectly emmetropic eye may exist in nature, but in all probability a certain amount of astigmatism is both physiological and purposeful, and in the normally developed eye there would appear to be some relationship between the astigmatism and the antero-posterior length. In any case, whatever its length and curvature, every healthy eye has its own normal standard of visual acuity, maintained by a muscular correction of at least a part of the refractive error, while upon occasion an even higher standard may be reached by straining. The visual ideas we have of our surroundings are those as pictured to us by this normal standard of visual acuity, 6/12, 6/6, 6/4, or whatever it may be; with these ideas, or only gradual modifications of them, we have grown up, and to them we are used. As long as this normal standard is maintained or only gradually modified, our visual knowledge of our ordinary surroundings is accurate and stable; but when sudden variations from this standard arise the information given us by our eyes is fallacious and vertigo may result.

As years advance some impairment of vision is inevitable in every eye that is not perfectly emmetropic; not only does the muscular mechanism become less energetic, but the crystalline lens becomes less and less able to respond to it. Such a process in a healthy person is a very gradual one; the muscular effort, though feebler, is steadily maintained; the visual apparatus as a whole is stable, and there is no tendency to giddiness. On the other hand, vertigo is a common phenomenon on the first adoption of a correcting lens. If the lens is accurate a perfect image can only be obtained when the muscular mechanism is absolutely quiescent; such quiescence is quite unnatural to it, and it persists in trying to do what it has been accustomed to do; any effort it makes inevitably causes some blurring of the image; the visual apparatus as a whole is unstable, and giddiness may follow. When an inaccurate lens is adopted vertigo is still more probable, for a stable condition is only possible when the eye has learnt to deal with the new artificial error. Again, when a correcting lens is discarded a call is at once made upon the muscular mechanism to do the work the lens has been doing; it usually cannot, at any rate at first, adequately respond; an unstable condition again arises with similar possibilities.

The presence of an uncorrected error of refraction is always a potential cause of giddiness, and it may be asked why one person should have trouble and another not, and, still more, why a patient who has had years of comfort should have attacks of vertigo. In point of fact, similar questions arise about many other phenomena, and it is quite certain that, though some kinds of error are undoubtedly more difficult to deal with than others, it is neither the amount nor the nature of the error which is the important point, but rather the ability of the muscular mechanism so to compensate it that the visual apparatus as a whole is stable. Heredity certainly plays a great part; modern education, especially in girls between 14 and 21, may be disastrous; and occupation is always of supreme importance: the

gardener is much less likely to have trouble with his refractive error than the clerk, the surgeon than the bacteriologist. Any exhausting central or peripheral stimulus, a sunstroke, a head injury or other serious accident, an operation, childbirth, a debilitating illness, "shell shock," may lead to an inability to cope with ocular defects. Similarly, there may be a breach of compensation as a result of poisons, endogenous or exogenous, of alterations in the quantity, quality, or pressure of the blood, of worry or other psychical causes. In almost every case there are at least two such factors at work.

Once the muscular mechanism has become unstable, giddiness may occur when any special strain is put upon it by, e.g., (1) a spell of reading or close work; (2) change of posture—stooping, getting in and out of bed; (3) locomotion—train, tram, tube, motor, and even walking in crowded streets or going up and down stairs or lifts; (4) a visit to a cinematograph, theatre, or picture gallery; (5) glare, especially on a sunny summer day at a fashionable seaside resort; (6) tennis and other games that involve keeping the eye constantly focussed upon a ball travelling backwards and forwards, in fact by fatigue of any kind.

It is obvious that, when giddiness arises in connexion with an unstable condition of the visual apparatus from some such causes as the above, it is not primarily ocular, and that the same causes would be conducive to other forms of vertigo. The importance of the ocular element is that it is an almost constant factor, and that the eye is the only part of the nervous system that admits of direct mechanical assistance, which should be given to it in the form of an accurate correcting lens when the condition does not readily yield to other measures. The ocular element may in this way be as far as possible eliminated, and though the amount of wasted energy saved by the glass may or may not be great in comparison to that required by the body as a whole, however little it is, it may be enough to make the receipts balance the expenditure and allow the *vis medicatrix nature* a freer hand. Accurately to fit the rigid to the less rigid is not an easy task, and a lens that only substitutes one error for another is useless. When there is half a diopter of simple hypermetropic astigmatism and + 0.25 S. + 0.25 C. is ordered, the result is to create an artificial myopic astigmatism of a quarter of a diopter; when the real correction is - 0.25 C., and + 0.25 C. is prescribed with the axis at right angles, a pure myopia of a quarter of a diopter is produced.

A latent muscle-balance defect, especially a hyperphoria, is a not infrequent source of giddiness in similar conditions to those mentioned above.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF

ANEURYSM AT THE TERMINATION OF THE EXTERNAL CAROTID ARTERY, AND ANEURYSMAL VARIX BETWEEN THE BIFURCATION OF THE COMMON CAROTID ARTERY AND INTERNAL JUGULAR VEIN.

By R. F. BOLT, M.R.C.S., L.R.C.P. LOND.,
TEMPORARY CAPTAIN, R.A.M.C.

THE following case of traumatic aneurysm presents features of more than ordinary interest.

The patient, an officer aged 25, was wounded on Jan. 14th, 1916, by fragments of a rifle grenade, and was admitted to a general hospital on the 16th. There were two small wounds, one in the left cheek (a in figure) immediately in front of the lobule of the ear, the other (b in figure) opposite the posterior border of the left sterno-mastoid muscle, on the level of the thyroid cartilage, as shown in the accompanying illustration.

On examination it was found that immediately beneath the facial wound was a swelling about the size of a pigeon's egg, pulsating synchronously with the heart, the pulsation being expansile in character. A faint systolic bruit could be heard on auscultation over the swelling. In the neck the tissues of the anterior triangle were infiltrated generally and there was marked ecchymosis. Opposite the thyroid cartilage was a pulsating swelling, indefinite in outline, about the size of a hen's egg. The purring thrill characteristic of an arterio-

venous wound was felt. On auscultation a continuous bruit was heard becoming louder at each systole. An X-ray examination was made and two small fragments were shown, one opposite the neck of the mandible and one opposite the second cervical vertebra. The patient was kept at complete rest with his head between sand-bags, in the hope that he would become fit for transfer to England.

At about midnight six days after admission a severe hæmorrhage took place from the facial wound. On removal to the operating theatre it was found extremely difficult to deal with the hæmorrhage at the site of injury owing to the vessel being embedded in the parotid gland, and Major A. E. Webb-Johnson, R.A.M.C., decided to expose the vascular lesion in the neck in the hope that only the external carotid artery was involved. The common carotid artery was exposed by an incision along the anterior border of the sterno-mastoid muscle, and a temporary ligature was placed round the vessel, which was then followed up in its course in the neck. When the bifurcation of the common carotid artery was reached, a wound was found on its anterior surface, from which a furious hæmorrhage took place in spite of the ligature on the main trunk. There was no venous hæmorrhage—in fact, the internal jugular vein appeared to be thrombosed. The external carotid artery was then controlled by a ligature, but the hæmorrhage continued from the bifurcation, an occurrence which seemed to be of good augury for the cerebral circulation. Ultimately the common, external and internal carotid arteries were secured by ligature. Intravenous infusion of saline was necessary in the theatre on account of the loss of blood.

The patient was allowed up three weeks later, having made an uneventful recovery. He was granted six months' leave by a Medical Board in England, and rejoined his regiment this autumn.

I am indebted to Lieutenant-Colonel T. H. Goodwin, R.A.M.C., and to Major Webb-Johnson for permission to publish this case.

A RARE CONGENITAL MALFORMATION.

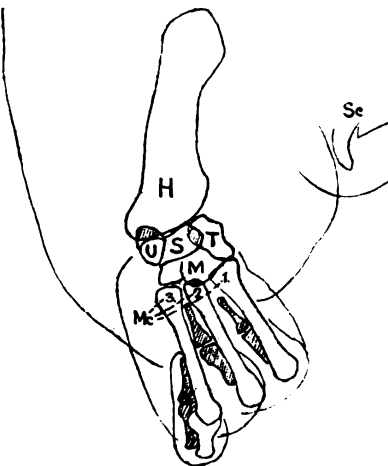
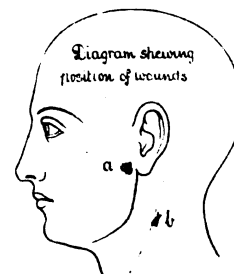
By W. FLETCHER STIELL, L.R.C.P. LOND., M.R.C.S.,
SENIOR HOUSE SURGEON, COUNTY HOSPITAL, LINCOLN.

I RECORD this case chiefly on account of its extreme rarity and also because of its singular interest from a developmental standpoint.

The patient was a single woman, aged 62, who sought advice for a pain localised apparently in the region of the left shoulder-joint. She was one of a family of ten, but her

four sisters and five brothers suffer from no congenital deformities whatever. The patient herself ascribed her complaint to be due to the fact that her mother was scared by a tortoise early in pregnancy, and certainly at first sight the patient's upper limbs are remarkably amphibian in appearance. Notwithstanding a very serious deformity, at the present time the patient is earning a very comfortable livelihood as a skilled dressmaker. As the condition is

bilateral, it is only necessary to describe one side. The total length of the upper extremity from the tip of the coracoid process to the tip of the longest digit is 7 inches.



Reduced tracing of skiagram. Sc, scapula; H, humerus; U, unciform; S, scaphoid; T, trapezoid; M, os magnum; Mc, 1, 2 and 3, metacarpals.

Muscular development is excellent. The elbow-joint itself is entirely absent, but this is compensated by an abnormally efficient range of movement at the shoulder-joint, while the mobility at both the wrist and interscapulo-thoracic joints is quite pathological. From the skiagram, of which a reduced tracing is given, it will be seen that both the radius and the ulna are entirely absent and that the carpus is represented solely by the unciform, os magnum, trapezoid, and one quite abnormal bone, probably a glorified scaphoid. The metacarpal bones of the thumb and index-finger are absent, as are also the corresponding digits to these bones. The three existing digits are held in the semi-flexed position chiefly by contraction of the flexor tendons. There is no syndactylism. The humerus is represented by a short stout bone of about four inches in length which articulates with a very abnormal scapula at its upper end and directly with the freak carpus at its lower. Notwithstanding the total absence of both the radius and ulna, there is a normal range of pronation and supination, provided apparently by an exaggerated rotatory movement of the head of the humerus in the glenoid fossa. With the exception of the upper extremities the remainder of the skeleton is normal. There is no trace of any mental impairment.

Lincoln.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF PATHOLOGY.

Exhibition of Specimens.—Results of Feeding Mice with Mouse Cancer.

A MEETING of this section was held on Dec. 5th, Dr. J. A. MURRAY being in the chair.

Dr. J. B. CHRISTOPHERSON exhibited a Large Salivary Calculus from Khartoum. The stone weighed 24 gm. and measured 4.3 cm. long, 3 cm. broad, and 8 cm. in circumference. It had been removed from a Greek aged 42, who had noticed a swelling in the submaxillary region for 18 years. A probe passed along Wharton's duct was arrested by the stone $1\frac{1}{2}$ in. from the orifice. It had been removed through the mouth. Apparently the submaxillary gland had not been affected, for it subsequently regained its normal size. On removal the calculus was olive-green in colour, granular, and deeply grooved by the ramus of the jaw.

Professor S. G. SHATTOCK exhibited under the title "Pseudotuberculoma Silicoticum" a lesion about the size of a haricot, which was excised by Mr. C. R. Nitch from the substance of the lower lip, the history being that the patient, a healthy athletic man, had been some time before thrown on to the road from a bicycle at full speed, when he received injuries to the face and to the inside of the lower lip. As an alternative to the diagnosis of a neoplasm, Mr. Nitch suspected that the lump might possibly be an induration connected with the inclusion of some foreign material. Microscopic examination showed that the lesion consisted of a congeries or mosaic of giant-celled systems, and huge giant cells, hardly to be distinguished from those of tuberculosis, although no caseation was present. Von Pirquet's test, carried out about three weeks after the operation, proved negative, and no tubercle bacilli or other bacteria were discoverable in microscopic sections. In practically all the giant cells, however, and elsewhere, there were particles of silica, which stood brilliantly out when the sections were polarised. That the material consisted of silica was proved by its insolubility in boiling nitric acid. In regard to the intestinal lesions set up by the administration of powdered glass (a frequent practice in India), Professor Shattock remarked that no observations were extant, with the exception of one or two rapidly fatal cases in which particles of glass had been found in the bowel. It was unlikely, however, that a tubercloid lesion would result from such a cause, since the infective inflammation arising from abrasions so produced would be followed by the extrusion of the foreign material. Through the kindness of Sir Arbuthnot Lane, Professor Shattock had recently had the opportunity of examining a piece of intestine excised in a presumed case of glass-poisoning where vomiting and pain came on shortly after a meal at which, it was confessed,

powdered glass had been given in a meringue. The abdominal pain became chronic and was later followed by stricture. The portion of intestine excised, about 8 inches in length, from the middle or upper ileum, presented the condition of chronic enteritis, the mucosa being tumid, in places ulcerated; and the lumen at the distal and proximal ends constricted; the muscularis was notably hypertrophied. Microscopic sections carried through the ulcer, and elsewhere, disclosed no particles of glass. In this case the characters of the lesion and the difficulty of explaining its location (for both tuberculosis and syphilis were excluded) pointed to the probability that the cause alleged was the true one.

Professor SHATTOCK and Mr. L. S. DUDGEON recounted some experiments of which the object was to ascertain whether cancer cells possessed biological properties which would incite normal cells to participate in their purposeless or anarchical growth. For this end, in one set of experiments a cell-free extract of mouse cancer (No. 63, Imperial Cancer Research) was prepared by shaking the tumour pulp in Ringer's fluid to which glass had been added, so as to destroy the cells. The cell-free extract was then used as a medium in which to soak the normal tissues, which were afterwards grafted subcutaneously. The normal tissues used were (1) mouse testicle, and (2) mouse embryo, so as to include all the tissues with their endocrinal activities. In neither case did any neoplasm arise, although in the second a slight growth occurred from the fragments of foetal cartilage—a result which takes place independently, however, of any such second factor. As a better extension of the second experiment the tumour itself was minced together with mouse embryo. Foetal tissue of every kind was thus implanted amidst the growing cells of the tumour. No mixed neoplasm arose, although the tumour with which the experiment was commenced was afterwards subcultured 15 times, and the subcultures rejuvenated with mouse embryo on three occasions. The only tissue which survived was the foetal cartilage, the fragments of which underwent a slight amount of growth; but in no instance did it present any indication of a sarcomatous transformation.

Professor SHATTOCK and Mr. DUDGEON also made a communication on certain results of feeding mice with mouse cancer. The tumour used was that known as No. 63 at the Imperial Cancer Research. The feeding was commenced in May, 1914. For the supply of tumours, mice which had been subcutaneously inoculated were from time to time killed, the tumours being afterwards removed and pinned to a slip of wood; the animals were fed in addition with oats, carrot, boiled potatoes, &c. They were four in number. 1. March, 1915: One of the four, a female, died. It had received 42 tumours, the experiment having extended over a period of ten months. An extensive growth filled the upper part of the mediastinum; in the mesentery there were some enlarged lymphatic glands. Histologically the growth was a round-celled sarcoma; it contained no giant cells. On the lung there were a few minute nodules which exhibited the same structure as did also the mesenteric gland. 2. April 1915: A second mouse was killed as it had developed a prominent tumour in the left labium. It had received 42 tumours. The growth was found to surround the lower part of the vagina, but without protruding from the canal; it proved to be microscopically an invasive endothelioma. 3. A third mouse was killed in July, 1915, since the abdomen was large, the enlargement having exceeded the period of pregnancy. The enlargement, however, proved to be due solely to the growth of two masses of fat about the uteri, probably following the close of the reproductive function. 4. The last of the mice (male) died in August, 1916. It had received 72 tumours. On one lung there was a small solid formation, which was microscopically of compact, uniform structure, without leucocytes, and consisting of epithelial cells: the surrounding tissue was normal. It was wholly unlike a broncho-pneumonic nodule, and the alternate view was that it was a primary carcinoma. The authors possessed a section of a tumour, the size of a pea, which was found unexpectedly in the human lung at a post-mortem examination, and which was structurally identical with the foregoing, and, like it, might be regarded as a primary carcinoma arising from the epithelium of the pulmonary alveoli. In commenting upon these results the authors remarked that as none of the new growths were identical in structure with that used for feeding the animals, they could not be viewed as due to cell implantation. This was parallel

with the fact that among the tenants of "cancer-houses" the disease affected different organs, and often those deeply seated, where direct implantation was out of the question. In cancerous families it was equally true that the disease might affect different organs and be of different histological structure in different members, and, moreover, that the appearance of sarcoma might be intercalated amongst carcinomata. There was, however, a second hypothesis of transference as a post-natal phenomenon, which the various facts brought together suggested—viz., that the cell might be the vehicle of an ultra-microscopic virus symbiotic with it; and that if transplantation of the cell failed the virus might be freed, and after its absorption and distribution might infect some structure of a second individual, provided there were any such structure prepared for its symbiosis. Whether the virus in hereditary transmission was itself transferred, or whether the transmission were limited to the aptitude of certain cells for post-natal infection, was a matter that need not be discussed. It was clear, however, that the parasitic theory, as rehabilitated in the form of an ultra-microscopic symbiote, was not disposed of by the facts established in regard to heredity. And the same might be said of the results of the experimental prophylactic immunisation against grafted mouse cancer by the antecedent subcutaneous injection of mouse blood, or of mouse embryo, or mouse skin; they so modify the fate of the grafted cells that the virus is rendered harmless, since there are no other cells prepared to symbiose with it. If the results of the mouse-feeding experiments recorded are to be interpreted on a parasitic hypothesis it would be, then, that the carcinogenic virus was freed on the destruction of the ingested cells and transferred after absorption to the body of the host, wherein it incited the formation of a malignant neoplasm in some spot where the cells were prepared for its symbiosis.

SECTION OF ELECTRO-THERAPEUTICS.

Treatment of War Injuries by Electrical Methods.

A MEETING of this section was held on Nov. 17th, Dr. G. HARRISON ORTON, the President, being in the chair.

Major W. J. TURRELL, R.A.M.C. (of the Oxford Military Hospital), introduced a discussion on the Treatment of War Injuries by Electrical Methods, which is published in full in this issue of THE LANCET.

Dr. T. GRAINGER STEWART spoke of his experience of electro-therapeutic methods, mostly in connexion with neurology. He was very willing to accord to electro-therapeutics the great amount of success which he thought everyone admitted was due to it in the treatment of nerve injuries; but he also agreed as to the necessity of correlating the clinical side with the method used. He spoke highly of the value of static treatment, and said the late Sir William Gowers held an equally good opinion of it, especially for certain conditions of muscular atrophy, and where stiffness of joints was due to reflex or functional contracture of muscles.

Dr. F. HERNAMAN-JOHNSON uttered a warning against over-stimulation of muscles, resulting in their fatigue. This was, in many cases, due to an imperfectly trained man seeking to expedite his results; its effect was to retard recovery. In such cases it was necessary to apply a relaxation splint and to abstain from applying stimulation for several days. An electro-therapeutic department must be self-contained. If a stiff joint was being treated in the department it was not fair for the surgeon to break it down, without reference to the treatment being carried out. For shell-shock, cerebral galvanisation, after the method of Le Duc, was very serviceable, especially for the attendant sleeplessness; but the polarity was an important factor. Hypnosis had also been found of considerable benefit; and the application of X rays had been found very efficacious for allaying pain.

Dr. F. HOWARD HUMPHRIS confined his contribution to a consideration of the benefits to be derived from the static form of electricity, though that did not mean a lack of appreciation of other methods. In regard to certain therapeutic uses, he knew nothing which could replace the static machine. It provoked muscular contractility, and brought about local vibratory effects without causing pain, and so relieved congestion and stasis. It was useful in most forms of trench-foot, even when gangrene had already set in.

Dr. BURKE related the results he had had in 300 cases of nerve injury. He largely employed rhythmic stimulation by the faradic current—i.e., the stroking method—though the various other forms were used in suitable cases.

Dr. E. P. CUMBERBATCH thought that in the discussions which had been held concerning the treatment of war injuries, electricity had received but scanty attention; and Major Turrell was to be congratulated on the results which he had obtained at Radcliffe Infirmary. That gentleman was fortunate not only in having a well-equipped electrical department but in being able to select a large number of his own cases for electrical treatment. He gave a summary of his results at St. Bartholomew's and the 1st London General Hospital.

Dr. DONALD BAINES, Dr. BATTEN, and Dr. ETTIE SAYER continued the debate, and Major TURRELL replied.

MEDICAL SOCIETY OF LONDON.

The Blind Soldier.—Facial Restoration.—Limping and the Re-education of Walking.—Speech Defects in Soldiers.

A MEETING of this society was held on Dec. 11th, Lieutenant-Colonel D'ARCY POWER being in the chair.

Mr. ARNOLD LAWSON described the work being done for the blind at St. Dunstan's, to which Sir Arthur Pearson was devoting his life. Whilst retaining its name, St. Dunstan's had now become a great national undertaking with accommodation for 180 men at the central institute, 200 at Regent's Park College, two large houses in Portland-place for officers and another in Paddington; and convalescent homes at Brighton and Torquay. For the purposes of after-care, the kingdom had been divided up into eight districts. At present there were 260 men in training and 128 others in hospitals or elsewhere awaiting treatment; 125 had been fully trained for an average of eight months and settled. Men were considered blind if through visual defect they were incapable of carrying on an ordinary existence and supporting themselves. A difficulty arose with regard to shell-shock cases of blindness; some had come to be treated as blind, others had been referred to convalescent homes, &c. A complete revolution in the training of the blind had been brought about by the war. Before the inmates of institutions for the blind had chiefly been affected since infancy, or were old people. The saving clause of the present situation was the buoyancy and reparative power of the youthful patients. The men were taught to accept their lot as an inconvenience, not as a disability; to retain their feeling of independence, and to lose the natural suspicion of the blind man. All were taught to read and write. It was unfortunate that Braille was so difficult for men whose fingers had been rendered insensitive by their previous occupation. Typewriting had proved to suit everyone. Each man was also taught two handicrafts, as far as possible by blind instructors, massage excepted. Physical fitness was assisted by Swedish exercises. Working hours were from 9.30–1 and 2.30–4.30; it had to be remembered that the blind tired more quickly than men with sight, and that many were still invalid and soon suffered from headache on overworking. The trained man was finally settled. A house was procured for him, and he was set up in business under the supervision of the after-care department to correct his work and to protect him from the unscrupulous.

Lieutenant DERWENT WOOD, A.R.A., gave a demonstration of the various stages in making a facial mask for a disfigured soldier. One patient exhibited was wearing the finished plate, and another had a pulsating wound of the cranial vertex for which a protective shield had been made covered with hair. Lieutenant Derwent Wood's procedure was as follows: A plaster mould was taken in the case of the first man, who had lost his right eye, orbital region, and the base of his nose. To do this the cavity of the wound was filled with the usual dressing, which, together with the left eye and eyebrow, was covered with goldbeater's skin, all portions of the head not wanted in the mould being bandaged. The nostrils were blocked with cotton wool. After the exposed portion of the face had been oiled, the plaster was mixed with tepid water and applied. In five minutes the mould was removed. The subsequent steps are then as follows.

The mould is dried, French-chalked, and a clay or plasticine squeeze obtained from it, giving a positive model of the patient's dressed wound and the surrounding healthy tissues. This is fixed to a board on a modelling stand and the wound is reconstructed in the model in every detail. The model completed, it is cast and the plaster positive of the wound and its environment procured. Another sitting is then obtained and the portions which are to be hidden eventually by the metal plate are modelled in clay (or wax), the edges being blended to the uninjured parts of the face, thus effectively masking any trace of wounds. This is once more moulded in plaster and, the edge of the proposed plate being marked on the negative, a cast is obtained, edges are trimmed to the marking, and the model is ready to have the artificial eye fitted to the lids. This is done from the back of the model, the plaster eyeball being dug out, the requisite thickness of the lids carefully worked down, the glass eye placed in position, and the edges of the lids made good with thin plaster. The model is now handed to the electrotyper and an exact reproduction by galvano-plastic deposit is made in virgin copper $\frac{1}{4}$ inch in thickness. This is finally well coated with silver. Bands are soldered in at the back to keep the eye in place. The plate is again fitted to the patient and strong spectacles are adjusted at a suitable angle to give a well-distributed pull on the plate. When a large plate is necessary an elastic band around the head is required. The final sittings are devoted to the pigmentation of the plate. False hair on eyebrows and eyelids were found unsuitable to withstand the weather; for the eyelashes he had adopted tinfoil split by scissors and soldered into the lids; for the eyebrows, pigment applied to the modelled forms.

Dr. JAMES B. MENNELL gave a demonstration in Limping and the Re-education of Walking. He pointed out that after injury of any sort, save that of the most trifling nature, some muscle or group of muscles always tended to waste. Even if wasting was general throughout the limb, it would nearly always be more marked in one muscle group than in others. In the performance of such a complicated action as taking a walking step most of the muscles in the body coöperated. He illustrated this by showing the effects on the gait of holding the arms in various positions, and showed that if the action of extraneous muscles had so marked an effect, lack of coördination of the muscles more intimately concerned must have a still more deleterious action. Also a weakened muscle required a longer latent period to elapse between the receipt of a stimulus and its contraction than was required in health. Hence after injury, direct or reflex, a muscle would act more slowly and more feebly than its uninjured fellows. In the re-education of walking the chief aim should therefore be to train the injured muscle up to its fellows, and the latter down to the former. In other words, coördination must be established between muscles whose relative activities had been altered. Moreover, it was just as necessary to train down the sound limb to the level of its more feeble fellow as it was to train up the latter. The demonstrator then showed how this could be done, first by simple swinging exercises of both legs in unison and alternately, then by allowing a portion of the weight to fall on the injured limb, and finally by splitting a full walking step into quarters, each quarter being practised separately until perfect coördination had been re-established.

Mr. CORTLANDT MACMAHON read a paper on Some Forms of Voice and Speech Affections in Soldiers, and described shortly the method which he had employed to remedy them, dealing in succession with shell-shock stammering, aphasia, and functional aphonia. He emphasised the value of perfectly performed breathing movements and their effect on the emotions. They were of special use in shock. The patient should lie recumbent, with the eyes half closed, and take steady long breaths, while the operator placed his hands upon the lateral thoracic regions. A rest should be taken after every six movements. Patients were told that they were undergoing a semi-hypnosis, and that by this breathing they were enabled to overcome the feelings of lost control and depression, and were improving their general health by oxygenating their blood. They were instructed to carry out similar exercises three times daily for five minutes at a time, and at night to perform them continually but more gently until sleep came. The demonstration was illustrated by records of several cases.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

The Allen Treatment of Diabetes.

A MEETING of this section was held on Nov. 3rd, Dr. H. C. DRURY the President, being in the chair.

The PRESIDENT delivered an introductory address dealing with the position and prospects of the section, and pointed out various directions in which the work of the section might be improved and made more interesting and profitable.

Dr. G. E. NESBITT read a paper on the Allen Treatment of Diabetes, and showed a case treated by the method. He detailed the procedure adopted to render and keep the urine sugar-free, and referred to the remarkable results obtained by American practitioners. The treatment was in many respects totally opposed to our previous conceptions of diabetes.

The PRESIDENT asked whether the cases reported were in any way selected as being specially suitable for the treatment; also, how it succeeded in young subjects.

Dr. WALTER G. SMITH considered that the fact that portions of the pancreas were left in the animal experiments vitiated the results. He had always divided the cases into two groups—the alimentary, which was easily controlled by suitable diet, and the endogenous, which manufactured sugar from body protein, and was hopeless. Glycosuria was not really the important thing, but the amount of sugar in the blood. He thought we knew very little as yet of the metabolism of sugar, and that it was often extremely dangerous to meddle.

Dr. T. G. MOORHEAD said that this method of treatment assumed that all cases of the disease were of the same type, which had not been proved, and he thought was not the case. Many cases got on very well on the old lines, and he would hesitate to subject these to such a severe treatment. The three cases in which he had tried it all exhibited marked acidosis.

Sir J. W. MOORE disagreed altogether with the principle of this treatment. He objected to starvation on account of the fear of acidosis. In addition to general hygienic measures, he had much faith in *cascara sagrada*.

Dr. A. R. PARSONS commented on the extraordinary claim that acidosis disappeared during fasting. Had any explanation been offered? He had under treatment a very severe case, with marked acidosis, and he would like to know whether the method should be tried. If this plan proved successful we would have to revolutionise our conceptions of the disease.

Dr. W. BOXWELL objected to starvation prior to operation in diabetes on the ground that it would increase acidosis.

Dr. H. BEWLEY referred to the possible injurious effect on the nervous system. He also objected to the idea of the patients testing their own urine. They would soon become hypochondriacal or insane.

Dr. G. PEACOCKE recalled a severe case in which he failed to get the urine sugar-free after three days' fast. Acidosis was present, and he did not persist further.

Dr. NESBITT, in reply, said that this treatment had been evolved after an enormous amount of accurate scientific work. It was by no means a therapeutic fad. If it proved successful, and the results obtained in large numbers of cases by American observers were remarkable, we would certainly be compelled to revise our knowledge of diabetes. The case he had shown had proved perfectly amenable to treatment. Acidosis had disappeared, as well as sugar. There were no unusual mental symptoms. For the more severe cases some modification of the fast, as recommended by Joslin, would probably be necessary. Among the American cases no selection had been made, and young subjects seemed to do particularly well by this method.

HARVEIAN SOCIETY OF LONDON.—A meeting of this society was held on Nov. 23rd, Dr. Edmund Cantley, the President, being in the chair.—In opening a discussion on the Treatment of Fractures, Lieutenant-Colonel Robert

Jones urged the necessity of deciding the guiding principles. For the ultimate restoration of the best possible function we had, he said, first, the mechanical cleansing of the wound and the free evacuation of septic fluids; then treatment of infiltrated and matted muscles and fasciæ; and, throughout, the proper alignment of the bones and adjustment of joint surfaces and spaces. In injuries about the shoulder-joint, should ankylosis occur, the hand could reach the mouth if the arm was abducted and the palm of the hand turned towards the mouth. This, then, was the position for treatment of compound or simple fractures in this region and of flail-shoulder. Injuries about the elbow-joint should be treated with complete rest in the flexed position: fractures of the forearm in supination. Injuries about the wrist should be treated in a position of dorsiflexion, the fingers being left free. After injuries to the hip joint the worst position to be feared is that of adduction, flexion, and external rotation, so that any severe compound injury at the neck of the femur should be treated with the thigh slightly abducted and extended and with the foot pointing directly forward. At the knee the position of maximum stability was one of extension, and if there be doubt as to its security it was wise to aim at slight bow-knee than risk a knock-knee, which tended to be progressive and to lead to flat-foot. Fractures at the ankle-joint should be treated so that the foot would be at right angles to the leg, and in a slightly varus position rather than valgus. In injuries to the tarsus efforts must be made to prevent painful foot or traumatic flat-foot. Fragments displaced downwards must be reduced upwards into line with the general curve of the foot or, if irreducible, removed.—Mr. J. Jackson Clarke pointed out the necessity, in cases of injury at the elbow-joint, of exercising a cautious delay in obtaining complete flexion.—Colonel F. Romer, after experience at a military hospital devoted to cases of stiff limbs, thought there was too great a tendency to immobilise joints unnecessarily when the fracture was at some distance from a joint. He alluded to the fine results obtained in late stages by massage and remedial measures.—Mr. E. Laming Evans referred chiefly to the operative procedures which he used where external splinting failed to produce correct alignment and length. In cases of fibrous ankylosis he thought that baths of various types were useful in preparing the part for active or passive exercises.—Mr. D. McRae Aitken said that in the forearm the ulna acted as a splint to the radius, and it was only necessary to get the ulna straight and leave the radius alone. The only point of fixation necessary for the radius was that the styloid process should be fixed down. An ulnar splint and a strap round and on the styloid process might be used. In injuries to the metacarpus the palm of the hand must be kept hollow and should be treated on something larger than a cricket-ball, otherwise the seat of fracture might kink into the palm, producing pain when anything hard were grasped.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—

A meeting of this society was held at the West London Hospital on Dec. 1st. Dr. A. Saunders, the President, being in the chair.—Dr. Theo. B. Hyslop read a paper on the Psychology of Warfare. Disclaiming any attempt at political discussion or censure of the enemy as being unworthy of scientific men, Dr. Hyslop dealt briefly under the headings of Anger, Fear, Power and its Misuse, with the psychological bases of warfare. He noted certain phenomena connected with hallucinations in times of stress. With reference to clinical features in psychical war effects, he drew attention to the prevalence of functional disturbances of the nervous system, such as temporary amnesias and aphasias, and also to what he believed to be the most striking problem for consideration—namely, the unmasking of primitive instincts.—The paper was discussed by the President, Dr. H. A. Smith, Dr. E. F. Buzzard, Mr. A. Baldwin, and others, and Dr. Hyslop replied.

LONDON DERMATOLOGICAL SOCIETY.—A meeting of the society will be held at 4.30 P.M., on Tuesday, Dec. 19th, at St. John's Hospital, Leicester-square, W.C., when there will be a demonstration of cases and specimens.

THE air-raid casualties of Nov. 27th–28th are now officially stated as: Killed, 4 (men, 1; women, 3); injured, 37 (men 16; women, 14; children, 7).

Reviews and Notices of Books.

Gynæcology: For Students and Practitioners.

By THOMAS WATTS EDEN, M.D. Edin., F.R.C.S. Edin., F.R.C.P. Lond., Obstetric Physician, Charing Cross Hospital; and CUTHBERT LOCKYER, M.D., B.S. Lond., F.R.C.S. Eng., F.R.C.P. Lond., Assistant Obstetric Physician, Charing Cross Hospital. With 513 illustrations and 20 coloured plates. London: J. and A. Churchill. 1916. Pp. 780. Price 27s. net.

In the new edition of his work on Diseases of Women Dr. Eden has secured the coöperation of his colleague Dr. Lockyer. The result is practically a new book much larger than the last edition, and with a great deal more space devoted to pathology. We may say at once that the book is a good one, and will undoubtedly have a considerable vogue among students. Possibly the share of the whole devoted to the pathology of the pelvic organs is rather excessive, but in view of the fact that one of the authors has done a great deal of pathological work in gynæcology, this was to be expected.

There are points upon which we do not see eye to eye with the authors, and others where we think they have not been quite clear. One of the most important subjects for the student is cancer of the cervix; we doubt, however, if the classification adopted by the authors will prove helpful to him. They classify carcinomata of the cervix by the character of the epithelium found in the developed growth, and not by the character of the epithelium from which they take origin. Thus they talk of a squamous carcinoma originating from the columnar epithelium of the cervical endometrium. Their statement is, of course, quite true that "almost all carcinomata of the cervix are of the squamous type," but we cannot agree that the classification of these growths is simplified by naming them not by the variety of the epithelium from which they spring but from the type of the cells they are made up of, which in the great majority of cases have undergone metaplasia, and so have lost their original character. Another confusing complication for the student is the use of the term medullary for a carcinoma spreading into the depths of the cervix, and which is therefore intra-cervical in position, the term being used in reference to its deep position and not in reference to the structure or consistence of the growth. This is, we think, a real misuse of the word medullary. This term, which had much better disappear as it is quite unnecessary, is used by practically all general pathologists to mean "a very malignant cancer of soft structure and rapid growth consisting mainly of cells"; so Cattell defines it in his medical dictionary, and so Professor J. G. Adami employs it in his Text-book on Pathology. Indeed, this has been the meaning of the term medullary as applied to any cancerous tumour for many years. One of the main difficulties encountered by teachers of gynæcology is the idea medical students so often have that the pathology of the female pelvic organs is something quite *sui generis*—a mistake fostered by the fact that many gynæcologists in their writings possibly unconsciously give this impression. The general principles of pathology are just as applicable to the pelvic organs as to any other of the organs of the body, and authors should be careful to employ phraseology and nomenclature which recognise this.

We wonder where the authors obtained the figures quoted on p. 753 as to the relative advantages of vaginal hysterectomy and the extended abdominal operation. In any such comparison it is, of course, necessary as far as possible to compare similar things—viz., the operation of extended vaginal hysterectomy with the operation of extended abdominal hysterectomy. In the report presented by Professor Dr. de Ott to the International Congress of Medicine in 1913 he showed that the proportion of cases free from recurrence for five years after the extended abdominal operation was 57.6 per cent., while after the extended vaginal operation as practised by Schauta it was 37.9 per cent., and in the reporter's own cases 34.1 per cent.—a very different result from that quoted by the authors of 62 per cent. and 12 per cent. absolute cures—that is, free from recurrence for five years after the two operations respectively. We quite agree that the results of the extended abdominal operation are the best, but at the same

time the results of the extended vaginal operation in the hands of competent operators are by no means so bad as the authors would have us believe. The section on endometritis and allied conditions is particularly good, and we are glad to see that the authors place these affections in their true perspective, pointing out how often endometritis is talked of and how comparatively rarely it is seen. The chapter on chronic metritis, a most difficult subject, is also very helpful and well illustrated. The frequency and importance of fatty changes in fibroid tumours is pointed out, as is also the relative unimportance of red degeneration of these tumours.

The book will owe a great part of its popularity among students to the large number of very excellent illustrations. Is it not time that English publishers copied their American colleagues and gave the credit that is due to the artists who draw the illustrations for the books they publish? Their work is sometimes just as difficult as, and often better done than, that of the authors; and to us it seems only right that they should be given the publicity they deserve in connexion with the success of such a book as this. Not only are their names not mentioned on the title-page but the authors do not acknowledge their debt in the preface, and in many of the illustrations the name of the artist has been deleted or does not appear. We started and we finish by saying that the book is a good one; it is full of information clearly imparted and written in an interesting way.

Nerve Injuries and their Treatment.

By PURVES STEWART, M.A., M.D. Edin., F.R.C.P. Lond., Temporary Colonel, A.M.S.; and ARTHUR EVANS, M.S., M.D. Lond., F.R.C.S. Eng., Captain, R.A.M.C. (T.). London: Henry Frowde and Hodder and Stoughton. 1916. Pp. 208. Price 8s. 6d. net.

Colonel Purves Stewart and Captain Arthur Evans have written a useful book on nerve injuries and their treatment, including not merely the peripheral nerves properly so called, but also the cranial nerves, cervical sympathetic, limb plexuses, and cauda equina. There are short chapters on methods of examination, on the symptoms produced by nerve injuries, on the conditions simulating nerve injury, and on prognosis. In the last half of the book lesions of particular nerves are discussed seriatim. Diagrams and photographic reproductions illustrate the majority of the types described. As might be expected, most of the cases quoted or illustrated are military cases. The clinical descriptions given do not go into minutiae, but the main features of the differing symptom-complexes are exemplified in an adequate manner. It is to be regretted that the authors have not given any end-results of their operative work, so far as they have been able to observe them, although their book is based on the examination of some 316 cases seen since the outbreak of the war. On p. 7 the "external peroneal" nerve should be either the peroneal or the external popliteal nerve.

Form and Function: A Contribution to the History of Animal Morphology.

By E. S. RUSSELL, M.A., B.Sc., F.Z.S. With 15 figures in the text. London: John Murray. 1916. Pp. 383. Price 10s. 6d. net.

THIS is one of those rare books which the reviewer puts down at the first reading as not only a good one, but one eminently wanted. The volume contains a well-written history of the progress of biological thought from the time of Aristotle to the present day, and the whole is woven together with admirable judgment and insight. The most striking impression left upon the mind of the reader is the remarkable manner with which Mr. Russell identifies himself with the author, whose ideas he is for the time being interpreting. He reviews each author as he falls into his place in this pageant of thought, and he does the whole with so much sympathy that it appears as though each worker in his turn were directly addressing the reader and leading him on to the stage of thought to which he has arrived. "Modern biology," the author observes, "has to a considerable extent lost its historical consciousness"; and, if that is so, we may safely assert that Mr. Russell has restored this consciousness to the subject in which he labours.

Perhaps to more than all the virtues that we have indicated we would pay tribute to that attitude which the author (with all his judicial calmness) cannot suppress—a very definite love for vitalism, a lovable regard for those "active,

living, passionate beings" which constitute the material for morphological study. It is this same leaning which makes his criticism of the work of Lamarck and of Samuel Butler such delightful reading. But in a volume which treats of the subject of the inter-relation of vertebrate and invertebrate the work of Gaskell is not mentioned, nor is his name to be found in the index. Gaskell's contribution to morphological thought would have lent itself admirably to the author's agreeable method of treatment.

LIBRARY TABLE.

Chart of the Natural Progression and Co-relation in School Subjects from the Child's Point of View. By ISABEL WHITE WALLIS. London: H. K. Lewis and Co. Price 1s. 6d. net.—Milton was probably the last to survey as fully as does the author of this chart the range of school studies. It is meant "to show that school life is long enough to give sound instruction in the beginning of all those subjects that make for a liberal education, if the subjects are properly co-ordinated in the mind of the child." "Sound instruction," "liberal education," "proper co-ordination," these are the boast of all the methods devised, but different meanings are read into the terms. The author of this chart thinks that harmony will be reached if all subjects are regarded "from the child's point of view," supporting the Montessori claim for freedom; but the chart gives little guidance how to secure the interest of the child. It classifies the subject of study and suggests a sequence of lessons, from some of which every teacher will dissent and with some of which every teacher will agree. It is probably most successful in treating of geography and physics, but with no subject does it make good a claim to co-relation as a dominant feature. It separates geometry from mathematics, and handwork from both, and though modern teachers know drawing as their most efficient correlating subject, the chart asserts "music and art do not lend themselves to co-related treatment." A very suitable scheme of history for children from 8 to 10 years, is followed by a catalogue for those from 10 to 12 years, that includes "Iberians and Celts," "The Two Causes of the Great Charts," "Akkades Relation to Chinese," "Chaldea, Excavations, Smith and Layard," "Egypt—Prehistoric—Early Dynasties, Their Work." There is no teacher but would profit greatly by study of the chart and of its introduction, for the author's love of children and zeal for education are manifest, but the encyclopaedist's rather than the child's point of view is too obvious in the construction of the chart, as the adjoining quotation shows.

Old Glass, and How to Collect It. By J. SIDNEY LEWIS. With 42 illustrations. London: T. Werner Laurie, Limited. Pp. 225. Price 15s. net.—The information given by Mr. J. Sidney Lewis, though not very recondite, is interesting and amusing; where it does not much help the intending collector the fault is not the author's. Glass is, to the superficial eye, very easily imitated, and no criteria of hallmark, as in silver, or of manufacturers' *chiffre*, as in china, are supplied. Hence the collector is largely thrown upon his own resources of historical knowledge, and especially of eye and touch, when confronted with a doubtful specimen. History is no great safeguard against forgery, for the makers generally are inspired by a knowledge equal to that of the amateur, and a trained eye or erudite touch can only be acquired by experience—notably by buying that experience. Mr. Lewis describes briefly and with effective and appropriate illustrations, the chief qualities of early English, eighteenth-century, Bristol, and Irish glass, enabling the collector to know what to look for, and encouraging him to believe that some quite good prizes may fall to his lot if he is industrious. A very interesting chapter on memorial glasses makes it plain that the "flat" glasses which used to be an inevitable article in the old curiosity shop were generally spurious.

The jackdaw spirit is rife in the medical profession, and Mr. Lewis introduces us to a pleasant method of indulging it. But he cannot be said to be urgent in his invitation to new amateurs to join in a sport at which he is so proficient, for his closing words warn the man who thinks that in collecting glass he may be investing money, that now he is able to buy at the top of the market in time for an impending fall. The book is beautifully got up, illustrated, and printed, but the proofs might have been read more carefully, for the repetitions are annoying.

THE LANCET.

LONDON: SATURDAY, DECEMBER 16, 1916.

Trinitrotoluene Poisoning.¹

AN official communication has been made to THE LANCET by the Ministry of Munitions, dealing with the dangers incurred by those working in the manufacture of the well-known high explosive trinitrotoluene. These dangers, as soon as they became obvious, were met with administrative measures for their control; immediate medical supervision of the factories was instituted, and scientific investigations into the toxic properties of the substance and their deleterious mode of action were undertaken. As a result much accurate information was soon obtained and communicated to all the responsible medical officers. The Ministry of Munitions have now wisely determined that the knowledge thus at their disposal shall be brought to the notice of medical men outside the factories, on whom devolves the duty of notifying toxic jaundice contracted in a factory or workshop; and this has been done in a plain and sensible document, supplemented by precise instructions for performing a urinary test for the detection of trinitrotoluene. The communication of the Ministry of Munitions will further be of use in that its contents are calculated to allay much of the widespread apprehension of the public as to trinitrotoluene poisoning. The fact that there is danger to the health of those engaged in the manufacture of trinitrotoluene is not concealed, but the amount of that danger is estimated and shown to have been much exaggerated in the popular mind, where also other forms of toxic affection have been confused with trinitrotoluene poisoning, to which they bear a superficial likeness. But while the effects of working with tetryl and picric acid, the poisons in question, are readily mistaken for those of trinitrotoluene, the constitutional symptoms in poisoning by the last are far more serious. It is well that the public should understand that all those whose skin displays a yellow, an apricot, or a greenish stain are not necessarily working in particularly perilous circumstances.

Before the outbreak of war, and, indeed, some ten years ago, Dr. WALTER MALDEN wrote a report on the blood results produced by anilin and nitrobenzol compounds in those engaged in dyeing, and the circumstances of dinitrobenzene poisoning came under examination.² Dinitrobenzene, which is readily absorbed by the skin, was found to produce blood changes of varying severity, while in a few cases toxic jaundice occurred, and toxic jaundice is an ominous stage in trinitrotoluene

poisoning. The points of analogy between dinitrobenzene poisoning and trinitrotoluene poisoning are rendered additionally interesting by the resemblance of both conditions to chloroform and to "dope" poisoning. In September and October, 1914, when the outbreak of war was leading to enormous activity in our aeroplane factories, the occurrence of illness associated with a pernicious form of jaundice was noted at the Hendon aeroplane factory and other similar factories. An inquest conducted with great ability by Mr. LUXMORE DREW into the death of an operative at the Hendon aeroplane factory, who had been an out-patient at St. Mary's Hospital, led to an inquiry, at which Colonel W. H. WILLCOX, senior scientific analyst to the Home Office, was associated with Dr. T. M. LEGGE, medical inspector of factories, in the investigations.³ As a result, the cause of death was traced to a degeneration of the liver following absorption of tetrachlorethane contained in the cellulose varnish, or "dope," used in the factories. When, therefore, cases of poisoning among the operatives in trinitrotoluene occurred, the authorities were not taken by surprise. They had a good deal of accurate information to work upon, for they were familiar with the occurrence of toxic jaundice in association with other forms of industrial poisoning, and it is due to these facts that it has been possible for the Home Office and the Ministry of Munitions to arrive at prophylactic measures of a valuable sort in a short space of time against trinitrotoluene intoxication.

These measures are founded in the first instance on the fact, which is clearly brought out in the official communication, that certain workers in trinitrotoluene have an idiosyncrasy towards toxic absorption, and that youthful operatives are especially liable. The workers, it appears, can be divided into two classes, the larger one remaining insusceptible from the first and however much exposed they may be to this form of poisoning, while a smaller class is liable as a rule to show symptoms of intoxication between the beginning of the fifth week and the end of the fourth month. The fatality among quite young operatives is so striking that one of the first preventive measures indicated is that only persons in good health, and as far as practicable over 18 years of age, should be employed in trinitrotoluene factories—in the Royal Arsenal the age-limits are from 20 to 50. The general precautions in factories where trinitrotoluene is being made include the frequent medical examination of all employed and the alternation of work or reduction of shifts where possible, as well as the adequate ventilation of the workshops. In the official communication stress is also laid upon the provision of a good canteen on the premises, while it is pointed out that workers should have the dangers explained to them of sleeping in the clothing which they have worn at the factory and of not being careful in their ablutions, especially before meals. We have called attention to the similarity, especially in the initial symptoms between trinitrotoluene poisoning and certain other industrial intoxications; the

¹ The full communication will be found on p. 1026.

² THE LANCET, July 15th, 1916, p. 115.

³ THE LANCET, March 13th, 1915, p. 544.

practitioners, therefore, to whom the communication of the Ministry of Munitions is directly addressed will welcome the addition of a urinary test whereby the characteristic reactions of trinitrotoluene can be obtained, and an early diagnosis be made.

The Law and the Medical Mystic.

WE noted recently a judgment which has been delivered in the New York Court of Appeals and which may have the unfortunate result of leaving Christian Scientists in the State of New York to carry on their silly and dangerous practices without interference, unless a new trial sets the confusion right. By the judgment the acts of the Christian Science healer were removed from the realm of quackery to that of religious thought, a technical misdirection in a lower court having led necessarily to the decision of the appeal tribunal. This sort of dilemma is inseparable, it appears, from the working of elaborate legal codes. While we regard with disapproval teachers and preachers, whether of religion or of social amenities, who would influence their flocks to submit themselves to healers, we do not desire to see any stretching of a law passed for a particular kind of offence, so as to make it include acts which it was not intended to punish, and to which in its ordinary meaning it cannot be applied. But the "religious" tenets of the Christian Science Church encourage dangerous quackery; they deserve no peculiar sympathy because many Christian Scientists are amiable people, and they should not escape the penalties of any legislation designed to check quackery.

In this country the immunity of charlatanism is at last receiving public attention, and reform will follow. For if the people in a self-governing State wish to protect themselves or their relatives and neighbours against the dangerous meddling of religious fanatics, or bogus medical men, they can always secure the passing of a law which will have the desired effect. The disciples of Mrs. EDDY are numerous in the United States, and at present in at least ten States the "Christian Science Church" is expressly exempted from the prohibitions which forbid unqualified medical practice in those States. In the State of New York the law is framed in terms that have led to a like result. In this country matters are different. We have fewer "Christian Scientists" among us, and the adherents to Mrs. EDDY's doctrines comprise no leaders in the intellectual world; but we possess a great variety of religious sects and a considerable inclination towards religious toleration, and respect for the beliefs of other people. We also allow any quack and impostor to treat the public for their ailments as long as he does not assume a medical title or a colourable imitation of one. We hope and think that this state of affairs will not last much longer; the feelings of the public against quackery have undergone a wholesome change under the stress of the war.

The progress of medicine and surgery during recent years, coupled with the achievements in science in the present war, have brought this

awakening intelligence about: the recommendations of the Royal Commission on Venereal Diseases, and the State control of these diseases now being set in motion throughout the country, should have a further and prompt effect. When the State begins to pay for treatment the necessity of having that treatment supplied by a properly educated profession is at once seen, and so is the danger to the public that underlies the pretensions of quacks as set out in advertisements. The attitude of the coming generation towards the Christian Scientists, the Peculiar People, and their similars is difficult to forecast. A recent writer¹ sums up his view of the Christian doctrine of health in the words: "The man who believes that the spirit has power to heal and invigorate the body, believes all matter to be pervaded and informed by spirit, to be the expression of spirit." Persons holding such views can hardly be classed indiscriminately with herbalists, nostrum vendors, and "bogus doctors." A distinction may also be drawn in their case between those who believe in the effect of coöperation in prayer on behalf of one another, and those who for gain cover their eyes and remain silent for 20 minutes in order that a stranger's disease may be arrested. In framing laws to control quackery, while leaving free the genuine religious feelings of the people, we shall have difficulties whenever religion and therapeutics get fused into a creed; and yet the efficacy of prayer, even supposing we confine it to suggestional influence, is undoubted. We hope that when legislation takes place the position of the religious trifter with disease may be clearly defined after due discussion; and we hope also that loopholes will not be left in any penal regulations that may be framed by which escape will be assured for mischievous meddlers merely because they can claim good intentions.

¹ The Christian Doctrine of Health: A Handbook on the Relation of Bodily to Spiritual and Moral Health. By the author of "Pro Christo et Ecclesia." Macmillan and Co. 1916.

THE LANCET, VOL. II., 1916 : THE INDEX.

THE Index and Title-page to the volume of THE LANCET completed with the issue of Dec. 30th will be ready early in the New Year. Owing to the continued shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a post-card to the Manager, THE LANCET Office, 423, Strand, London, W.C., when a copy of the Index and Title-page will be supplied free of charge.

LITERARY INTELLIGENCE.—Messrs. Baillière, Tindall, and Cox announce that they have in preparation for early publication a work by Dr. R. Fortescue Fox, entitled "Physical Remedies," and presenting in a convenient form the information which is necessary for practical treatment by mechanical apparatus, exercises and medical gymnastics, heat and cold in baths, by electricity and radiation, by massage, as well as by medicinal waters in the British health resorts. The same publishers are issuing within the next few weeks a work entitled "The Organs of Internal Secretion: Their Diseases and Therapeutic Application," by Dr. Ivo Geikie Cobb.

Annotations.

"Ne quid nimirum."

MENINGOCOCCUS SEPTICÆMIA.

INSTANCES of generalised meningococcus infection without meningitis are of importance both on account of the light they throw upon the pathogeny of cerebro-spinal fever and from the point of view of preventive medicine. A case of this character is recorded by Dr. W. M. Elliott in another column. Complete proof of the nature of the case, it seems, was not forthcoming, for by some mischance the blood was not cultivated, and from the highly septicæmic nature of the symptoms it is extremely likely that a positive culture would have resulted. It is even claimed by some observers that in analogous cases blood films may show meningococci, demonstrable by intracellular disposition and staining reactions. Nor was the bloody fluid in the vesicles on the legs searched for the specific organisms, a procedure which yielded some positive results in Sophian's work during the Texas epidemic. But although the absolute pathological proof is lacking in Dr. Elliott's case, he offers very strong relative pathological evidence, consisting of marked agglutination by serum with a dilution of 1 in 25, and, of greater value, a strongly positive result from the complement-fixation test. These two facts, together with the petechial character of the eruption and the occurrence of an undoubted case of cerebro-spinal fever in the same barracks a short time previously, make it highly probable that the case described was one of meningococcus septicæmia. The incidence of such cases as this is probably not very uncommon. They deserve more careful investigation, both along the lines of direct blood examination and of serum reactions. It is probable that the cases are more common in the early part of the cerebro-spinal fever season. The condition should be suspected whenever the practitioner is faced with a sudden febrile illness of doubtful nature accompanied by a petechial eruption, or by herpes. Incidentally we may remark that acute "septic" arthritis, arising without adequate explanation, such as a co-existent urethritis, may be another manifestation of meningococcus blood infection. Dr. Elliott says that his case "falls into the so-called septicæmic class of cerebro-spinal fever as described by Mr. Lundie, Mr. Thomas, and Mr. Fleming." But the thesis advanced by these authors was that *all* cases of cerebro-spinal fever passed through a septicæmic stage, whether or no they developed meningitis, which they regarded as almost accidental to the disease. This thesis has been discussed fully in recent monographs on the subject by Horder, Foster, and Gaskell, and the criticism, in view of all the facts, has been adverse. The occasional occurrence of a case like that described by Dr. Elliott contravenes rather than confirms the thesis. All the same, we note that in a still more recent contribution to the literature of cerebro-spinal fever by Messrs. Fairley and Stewart¹ the thesis is regarded, for purposes of a chapter on symptomatology, as established. But a good deal of the evidence adduced by these authors in favour of regarding cerebro-spinal

fever as consisting of a catarrhal, a septicæmic, and a meningeal stage appears to us to be open to criticism. Thus it is said of an outbreak of naso-pharyngitis at a military camp at Seymour, Victoria, that it is reasonable to assume that the outbreak was in reality an epidemic of catarrhal cerebro-spinal fever, because the epidemic took place immediately before and during the time when a large number of cases of actual meningitis occurred there; also bacteriological examination of "many" of the throats showed meningococci. But neither of these facts proves the point at issue at all. This Australian monograph contains valuable observations on matters of differential diagnosis, while the conclusion is arrived at that the results of procedures of any magnitude are not such as to justify them. Simple ventricular puncture should, however, be persisted in with the hope that ultimate re-establishment of drainage may result. And for acute cases, when respiratory failure occurs, venesection is recommended. The last chapter of this work records the observations of Guest and Fairley upon the use of hexamine and its derivatives as intra-spinal antiseptics, with the conclusion that, by whichever route administered, oral or intrathecal, the drug is very disappointing.

EPSOM COLLEGE.

YEAR by year for more than half a century we have urged the claims of Epsom College on the consideration of our readers, and this consideration is doubly necessary now that many annual subscriptions have been lost on account of the war and others because of the engagement of medical men on military duties away from their homes. The last annual report showed that the Foundation and the Trustee Funds had rendered assistance during the year to 100 pensioners, medical men or the widows and aged daughters of medical men, as well as boarding and educating 50 sons of medical men at the College. It is just this kind of help which the special circumstances of the war render more than ever necessary for the medical profession. No other medical benefit can take the place of a foundation with these objects and achievements. The Foundation should command more subscriptions now than ever before and be a first claim on anything like "war profits," if such there be amongst us.

A BULLET FREE IN THE LEFT VENTRICLE.

IN the present war several cases have been recorded of survival after a bullet had penetrated the heart, and in one at least the projectile was successfully removed from the left ventricle. But at a meeting of the Académie de Médecine on Nov. 7th M. Lobligeois reported a case in which complete recovery took place while a bullet remained, and presumably remains, free in the left ventricle. The details of the case, as it is recorded, can only be called surprising. The patient was a soldier who had been wounded several months previously, and was sent to M. Lobligeois to verify the state of the left lung and ascertain whether a projectile existed which the patient always said he had in his chest. He had no trouble of any kind. Radioscopy at once showed, it is said, a shrapnel bullet in the cardiac area, and careful examination enabled M. Lobligeois to conclude that it was free in the left ventricle. Its whirling movement with each cardiac pulsation was described

¹ Commonwealth of Australia Quarantine Service, Service Publication No. 9.

as characteristic, which would imply that the behaviour of bullets loose within the heart had been studied. At the end of the diastole the bullet rested on the inferior border of the heart near the apex. With the systole it rapidly veered from left to right, following the lower border of the heart, and then evidently encountered the interventricular septum and followed this from below upwards in a vertical line. It thus attained the highest point of the ventricle on its right border at the end of the systole. It rested there an instant and then slowly descended during the diastole from above downwards and to the left so as to regain at the end of this period its position at the apex and recommence the movement. It thus described a right-angled triangle with the right angle a little rounded. The rapidity with which it moved during the systole along the two sides of the triangle contrasted with the slowness of its movement during the diastole along the hypotenuse. M. Lobligeois pointed out that only radiography could have disclosed these remarkable phenomena. We hope that the progress of this case is being carefully watched.

THE PRESCRIBING OF COCAINE.

By an amending Order dated Dec. 5th some amendments have been made in the Defence of the Realm Regulation 40 B relating to cocaine and opium, of which the following are the most important: 1. Power is given to the Secretary of State to issue licences for the manufacture of cocaine in this country. Any person manufacturing or carrying on any process in the manufacture of cocaine without a licence or otherwise than in accordance with the conditions of the licence will be liable to a penalty. 2. A medical practitioner who gives a prescription for the supply of cocaine otherwise than in accordance with the conditions laid down in the Regulation is made liable to a penalty. 3. Every article containing cocaine must be marked with the amount and percentage of cocaine contained in it. 4. Power is given to the Secretary of State to direct that any person authorised under the Regulation to purchase cocaine or opium who is convicted of an offence against the Regulation or against the Proclamations regulating the import or export of cocaine or opium shall cease to be an "authorised person." 5. The authorisation in the case of registered chemists and druggists is limited to persons, firms, or bodies corporate who carry on the retail business of a chemist and druggist. The expression "authorised person" includes a duly qualified medical practitioner, a registered dentist, and a registered veterinary surgeon.

THE COURSE OF PREGNANCY IN A DOUBLE UTERUS.

WHEN the two halves of a double uterus are entirely separate one, or both, may be the seat of a pregnancy, or the two halves may become pregnant alternately. In the majority of these cases labour occurs naturally. The non-pregnant half, if entirely detached, may continue to menstruate, or more commonly it forms a decidua, which is discharged either at the time of birth or soon after. If pregnancy occurs simultaneously on both sides the children may be of different stages of development, and no doubt such a multiple pregnancy is the explanation of most of the cases of so-called superfetation. Abnormalities during pregnancy or labour, however, sometimes occur. Abortion is not

uncommon, and in some cases there is undue thinning of the walls of one or other half of the uterus and rupture may take place. Undue rigidity of the cervix may predispose to this accident. The muscle tissue may be poorly developed, and this leads not only to weak pains and to a prolonged second stage, but also to abnormalities of the third stage of labour. The pregnant half, or even the non-pregnant half, of the double uterus may become incarcerated in the true pelvis and so give rise to obstruction to delivery. In one recorded case the smaller half was incarcerated in the pelvis and contained the placenta, the external os being situated half-way between the symphysis pubis and the umbilicus. When the two halves of the uterus are only partially separated from one another, forming one of the varieties of uterus septus, abnormalities of childbirth are less frequent. When they do occur they affect mainly the third stage of labour, as in the case recorded on p. 979 last week by Dr. M. C. S. Lawrance. When in a uterus bicornis the foetus is in one horn and the placenta in the other, as is not infrequently the case, the separation of the placenta may be imperfect, and accompanied by severe post-partum hæmorrhage. In some cases the placental site is situated partly in one half and partly in the other half, and it has been suggested that the bleeding is due to the two halves of the uterus not contracting synchronously. In one recorded case the opening into the horn containing the placenta was so small, admitting only three fingers, that great difficulty was experienced in delivering the placenta. Besides abnormalities of the third stage of labour, malpresentations often occur in uteri of this kind. Transverse and breech presentations are relatively common, and it has been suggested that the foetus may be best accommodated to the shape of the double uterus when one portion, such as the head, is lodged in one side and the remainder of the foetus in the other side. It is probable that the case described by Dr. Lawrance was an example of a uterus subseptus with the two halves of the uterus unequally developed.

THE REGISTRAR-GENERAL'S QUARTERLY RETURN.

IN preparation for the Census of 1911 important modifications were adopted by the Registrar-General in the schedules and tabular forms required for that process, by virtue of which substantial improvements are apparent in his recent official returns and reports. The return for the fourth quarter of 1915 was enlarged by inclusion of the tabular matter originally contained in the "Annual Summary," which is now discontinued as a separate publication. The present return, which is published by Wyman and Sons (pp. 75, price 1s.), relates to the third quarter of the current year, and contains particulars of natality and mortality in the constituent areas of England and Wales during the 13 weeks ended Sept. 30th. A table of the deaths in England and Wales by sex, age, and cause during the fourth quarter of 1915 is incorporated in this issue, and similar tables are promised from time to time in future returns. In this table, which is uniform with the extended table now appearing in the annual reports, the deaths are distributed over 189 separate causes, at 26 groups of ages. But the value of this information, great as it is, will be fully appreciated only when the data for a long series of years are available for study and comparison. In the absence of reliable

data the population of England and Wales is assumed to have numbered 36½ millions at the middle of last year. Computed on this population the births registered in the third quarter of 1916 corresponded to a rate of 21·7 annually per 1000 living. The illegitimate births exceeded by 1218 the numbers thus returned in the corresponding quarter of 1915. The natural increase of the population last quarter, by excess of births over deaths, was rather more than 95,000, against 112,000 in the third quarter of the year preceding the outbreak of war. The deaths, civilian and non-civilian, were equal to 11·2 per 1000 annually. This figure cannot readily be compared with the rates of the previous ten corresponding quarters, because Table II. of previous returns, which gave this information, has been temporarily discontinued. Infant mortality last quarter was lower than in any other third quarter except that of 1912. It was equal to 79 per 1000 births, and was 41 per 1000 below the average in the corresponding periods of the previous ten years. An interesting table (VII.) shows the deaths of infants under 2 years from diarrhoea and enteritis in each of the 96 great English towns, compared with the average for the country generally. The counties of Lancashire and Durham are conspicuous as indicating excessive loss of life from these obviously preventable causes. Another useful table indicates the death-rates from these causes, at similar ages, in successive weeks of the quarter, the rates in excess of the average being shown by distinctive type. This table will be appreciated by the medical officers of health of the several towns, who will doubtless desire its continuance in future years. The usual tables are included showing the deaths from the more familiar infectious diseases, and these may be studied in relation to the records of reported attacks by notifiable diseases in Tables X. and XII. The tables for the metropolitan boroughs are somewhat more extended than those for other parts of England, whether relating to mortality or to incidence of infectious disease. Thus the metropolitan records alone show the deaths and mortality per 1000 of the civil population from pulmonary tuberculosis, indicating enormous differences in its fatality among the several areas. Moreover, the London tables give particulars, additional to those of the provinces, respecting the notification of cerebro-spinal fever, anthrax, glanders, ophthalmia neonatorum, and poliomyelitis. As in previous returns, the local rates of mortality from the principal epidemic diseases are compared. In the 96 great towns the highest rates were as follows: From enteric fever, 0·24 per 1000 in Great Yarmouth; from measles, 1·14 in Wolverhampton; from scarlet fever, 0·24 in Carlisle; from whooping-cough, 0·65 in St. Helens; and from diphtheria, 0·83 also in that town.

THE LATIN-LESS MEDICAL STUDENT.

THE General Medical Council, in deciding last week to register the medical student who has not taken Latin in his entrance examination to the medical faculty, were not departing from their declared policy. The compulsory inclusion of Latin in the curriculum of the school-boy destined to become a doctor was not designed to help him in the understanding of anatomical and pharmaceutical terms, nor to provide him in his professional life with one of the familiar appurtenances of culture, but to ensure a mental training sufficient to enable him to engage in medical study and to

continue the development of his mind during the process. For 14 years London University has made Latin optional in its medical entrance examination, and no evidence has been brought forward to show that any hindrance to the medical student's mental development has resulted. For almost as long the Conjoint Board has accepted this Latin-less examination as a portal to their own diplomas. Birmingham, Leeds, Liverpool, and Sheffield have followed London's lead, and Manchester has admitted the same principle by placing Latin in the list of optional subjects for matriculation in other faculties. That the mental equipment of the leaver from a modern secondary school where a sound knowledge of applied mathematics, of two modern languages, and of the beginnings of physical science is obtained, is less suitable as a groundwork for his medical training than that of a classical scholar is no longer seriously maintained. The framers of our language have, moreover, fortunately for the medical student, been so omnivorous in the past that practically all the Latin and Greek roots necessary for the appreciation of medical terminology have been absorbed into the common tongue and are already familiar to the careful student of his own language.

EXTRAPLEURAL THORACOPLASTY IN PULMONARY TUBERCULOSIS.

AT the meeting of the Scandinavian Surgical Association held at Göteborg this summer, Professor P. Bull, of Christiania, gave an account¹ of 11 cases in which he had operated during the last two years for the relief of unilateral pulmonary tuberculosis. The operation consists in removal of portions of the ribs. The object of operation is to secure the complete collapse of the infected parts of the lung. Professor Bull emphasised the importance of removing the posterior segments of the ribs overlying the affected parts of the lung; to remove only portions anterior to the angles of the ribs is, he says, necessarily unsatisfactory and inadequate. The costal cartilages and anterior portions of the ribs, on the other hand, need not be cut away, as, owing to their anatomical relations, they are capable of falling in when the underlying lung collapses as a result of the operation. In general he advises that the operator should aim at removing 10 cm. of the tenth and ninth ribs and about 15 cm. of each rib from the eighth to the fourth. If it is the upper lobe of the lung that is involved it is essential that from 10 to 13 cm. of the third and second ribs also should be dissected out. He points out that the scapula cannot fall inwards unless all the ribs upon which it rests—namely, the second down to the seventh or eighth—are dealt with. In one case he removed the first rib from behind, a difficult operation. Such extrapleural thoracoplasty as Professor Bull describes is indicated in cases of unilateral pulmonary tuberculosis as have failed to obtain benefit from other methods of treatment. It is contra-indicated if there is any clinical evidence of active tuberculosis in the other lung. Four of the eleven patients were cured, three died as a result of the operation, two succumbed a year later from their disease, and one died from intestinal tuberculosis. Dr. A. Christensen described the success with which he had carried out similar operations in five cases, without a fatal result. One patient, aged 24, had had tuberculosis of the right apex for 12 years. Treatment by artificial

¹ Tidsskr. f. d. Norske Lægeforening, Christiania, 1916, xxxvi., 849.

pneumothorax was attempted in 1915, but failed. Then the first and second ribs were dissected out from in front, but little benefit was obtained. At a second operation portions of the ribs from the third to the eleventh were removed, from their angles forward. The patient was up in a fortnight and left hospital vastly improved five weeks after the operation. Three of the other four patients did well after the operation. Local anæsthesia is recommended, and Dr. Christensen advises that the patient should be sitting up during the operation, which is likely to take from one to two hours in its performance.

NOTIFICATION OF BIRTHS.

A QUESTION was recently asked in the House of Commons calling attention to the report of the medical officer of health for Cumberland, which showed that in that county in the case of 2574 births notified in accordance with the law there was a death-rate of 68 per 1000, whereas 1476 births which had not been notified showed a death-rate of 147 per 1000. With regard to the extraordinarily large number of instances in which the law had not been complied with the President of the Local Government Board stated that the Cumberland county council had undertaken to take steps to secure better notification in future. The importance of a special effort being made by the county authorities to carry out duties recently imposed upon them—and no doubt not easy to provide for at the present time, when so many officials are absent—is proved by the two death-rates quoted. It is easy to understand that where notification of any kind to a public authority is prescribed, those who seek to evade the obligation will be precisely the class whose compliance with the law is of the greatest importance to the community. No one need be surprised, therefore, at the death-rate being higher among infants whose arrival in the world is not notified immediately to the medical officer of health, but that it should be more than twice as high is of real significance. The serious comparative mortality accompanying non-notification shows that there is a substantial wastage of infant life which may be brought under control and considerably diminished through the strict enforcement of notification, followed by measures which notification renders possible, and this fact should stimulate other county councils than that of Cumberland to increase their efforts. Universal notification is, of course, of but modern date. The Notification of Births (Extension) Act, 1915, which ordered that the tentative and adoptive Act of 1907 should extend to every area in which it was not already in force, has not yet had a chance of proving its usefulness by statistics collected over a long period throughout the kingdom. The Act was passed, however, at a time when any trustworthy figures proving that infant lives are wasted should attract immediate attention, for the loss of adult male lives and the diminished usefulness of a vast number of survivors are two sad things which are being forced upon our notice more urgently every day. There are administrative and sentimental difficulties in the carrying out of the Act, but successful administration seems to be a question of care and sympathy rather than of increasing the powers given by the law.

THE library and offices of the Royal Society of Medicine will be closed from 2 P.M. on Saturday, Dec. 23rd, to Thursday, Dec. 28th, inclusive.

TRINITROTOLUENE POISONING.

OFFICIALLY COMMUNICATED BY THE MINISTRY OF MUNITIONS.

BEFORE August, 1914, there had been little practical experience of the toxic action of trinitrotoluene (T.N.T.). No ill-effects had been observed from the small quantities used, and it was generally believed to be much less toxic than dinitrobenzene, which had been manufactured in this country on a small scale for many years and been used as an ingredient of explosive powders in a proportion rarely exceeding 15 per cent. During the past year, however, T.N.T. has shown itself to be dangerous to the health of at least a minority of workers coming into contact with it, and has produced fatal toxic jaundice in 50 cases out of many thousands of workers engaged.

As soon as the dangers from T.N.T. became obvious, administrative measures for their control, including medical supervision in all the factories, were taken and scientific investigations into the modes of action of T.N.T. were organised. Whatever light is being thrown upon T.N.T. poisoning by such investigation is communicated to the responsible medical officers in the factories concerned for their guidance. Many cases of illness, however, attributed rightly or wrongly to T.N.T. poisoning, have, or may, come to the notice of medical men outside the factories, and it appears desirable accordingly to make generally known to them the present state of knowledge in this matter, as on them now devolves the duty of notifying toxic jaundice contracted in a factory or workshop, to the Chief Inspector of Factories at the Home Office, London. Apart from such statutory notification, communications from medical men based on observations of any serious effects attributed to T.N.T. would be valued, and might be addressed to the same quarter. It is hoped to make in the early future further communications of results obtained by investigation.

Trinitrotoluene, also known as T.N.T. and trotyl, is a high explosive obtained by nitrating toluene—a product of coal-tar distillation. Toluene is a benzene compound in which one hydrogen atom of benzene (C_6H_6) has been replaced by the radicle CH_3 . In the process of nitration three other hydrogen atoms are replaced by the nitro radicle (NO_2), and the formula for T.N.T. may be written, $C_6H_2(NO_2)_3$, OH_3 . This body is solid at ordinary temperatures, in which state it can be reduced to a fine powder; it melts at about $80^\circ C$.

When the skin or hair is exposed to T.N.T. by contact, a characteristic yellow or tawny orange stain is produced, which lasts in the integument for some weeks. Derivatives of T.N.T. produced by the action of alkalies have characteristic colours; if a dilute solution of T.N.T. is treated with alcoholic potash, a deep pink colour changing to purple and then turning brown results. Skin which has absorbed T.N.T. has a bitter taste to the tongue, which is removable by solvents of T.N.T. but not by water, as in ordinary washing.

T.N.T. is soluble in oils and greases as well as in acetone, ether, benzene (benzol), xylene (xylol), and other compounds, and the importance of this will be referred to later. Alkaline alcohol changes the yellow stain in the skin to pink or purple, and the T.N.T. thus chemically changed is soluble in and can be washed out by water.

T.N.T. is used alone as a fine powder, or in a flaked condition, or in the molten state from which T.N.T. in vapour escapes and is deposited in the form of a fine crystalline sublimate upon any surface of lower temperature than about $70^\circ C$. When mixed with 40 per cent. to 60 per cent. of ammonium nitrate it is known as amatol, and with 20 per cent. of ammonium nitrate as ammonal. T.N.T., as used, is often impure and contains traces of dinitrobenzene and other similar bodies, but investigation has produced no evidence of its poisonous properties residing in impurities. Pure and crude T.N.T. are equally toxic, and in no cases have the separated impurities been found more potent than pure T.N.T. The separate T.N.T. isomers have also been carefully tested, and their toxicity appears to lie either at or slightly below the toxicity of T.N.T. Of the cases showing jaundice about 27 per cent. have arisen from pure T.N.T., 67 per cent. from amatol, and 6 per cent. from ammonal. Possibly the hygroscopic nature of ammonium nitrate may assist absorption through the skin.

DINITROBENZENE POISONING.

A natural guide to the new experience of T.N.T. toxicity is to be found in the older knowledge of that due to dinitrobenzene (D.N.B.). It has long been known that D.N.B. may be readily absorbed by the skin, and it may be supposed that this absorption is affected or aided by the solubility of D.N.B. in the cholesterol fats of the skin or of greases used either in factory processes or as ointments. It may, perhaps, pass through the skin by the mechanical inunction of minute particles.

The most obvious results of D.N.B. poisoning by skin absorption are changes in the red blood corpuscles. As in nitrite poisoning, there is a conversion of oxyhæmoglobin to the more highly oxidised form methæmoglobin, and this change, if large in amount, produces breathlessness and cyanosis (both removable by breathing pure oxygen), which last until the body has been able to reduce the methæmoglobin to the natural form. Beyond this simple chemical result there may be, when the poisoning is more severe, hæmolytic degeneration of the corpuscles and escape of methæmoglobin into the plasma. In severe cases evidence will be found not only of destruction of the red corpuscles, but also of activity in the blood-forming organs; nucleated red corpuscles may be found in severe cases, with evidence of imperfectly developed corpuscles, as shown by the occurrence of basophile granulations, polychromasia, and variations in shape and size. Lymphocytosis may also occur.

If the dosage of absorbed D.N.B. is not too great, blood formation seems able to keep pace with blood destruction; cessation from work for a short time enables the blood to recover rapidly from the effects of poisoning.

In D.N.B. poisoning these effects upon the blood are by far the most prominent feature. In very rare cases toxic jaundice may occur. Thus, in 1906 a dinitrobenzene worker after three months' employment died in the Huddersfield Infirmary, having been admitted for symptoms of cyanosis, vomiting, jaundice, and dyspnoea. Post mortem the liver was stated to have resembled that of acute yellow atrophy.

These facts suggest that (a) while D.N.B. upon absorption produces in all persons alike its chemical effects in the blood, varying in degree according to dosage (this being dependent again upon conditions of work, precautions taken, and perhaps upon varying greasiness or permeability of skin), and according to individual powers or opportunities for blood recovery; (b) it produces as an additional phenomenon liver degeneration only in a small minority of persons in whom the body cells are specially susceptible to the poison.

CHLOROFORM AND DOPE POISONING.

Upon this view of D.N.B. poisoning, an analogy to it may be found in chloroform poisoning. In the vast majority of patients chloroform only shows its anæsthetic action. In a very small minority, however, it may also give rise to degeneration of the body cells especially of the kidney or of the liver, and in the latter case it may kill by liver degeneration and atrophy, with accompanying "toxic jaundice."

A further analogy may be drawn from facts recently made prominent in connexion with the toxic jaundice, which became serious in this country for the first time towards the end of 1914 among persons employed in "doping" aeroplane wings, as the result of the presence in the dope of tetrachlorethane ($C_2H_2Cl_4$), which, inhaled as a vapour, acts upon nervous centres, and is also a powerful liver poison. The toxic jaundice so caused has now happily ceased since tetrachlorethane has no longer been an ingredient of any aeroplane dope. During the time of its use at least 70 cases of jaundice with 12 deaths are known to have occurred. In the fatal cases the liver and kidneys were always the organs principally affected, and with changes indistinguishable from those to be described as induced by T.N.T. Alteration in the blood was absent, thus distinguishing the cases from toxic jaundice caused by nitro-derivatives of benzene and toluene. Here, then, we have a body, closely allied chemically to chloroform, which, while the anæsthetic properties as used industrially are not so prominent, finds a much larger number of persons susceptible to its toxic action on the liver.

TRINITROTOLUENE POISONING.

In view of the old experience of D.N.B. poisoning, it would appear *a priori* likely that T.N.T. can be absorbed in

a dangerous degree by the skin, and recent experiments establishing this absorption will be mentioned below. Fine dust and fumes will reach, besides the exposed skin surfaces, the mucous membranes of nose and mouth—perhaps even the lungs themselves—and must inevitably be swallowed either in the saliva or with the mucous secretions from the nose and windpipe.

T.N.T. may be recovered unchanged from the faeces, and is probably there present in most of the workers. In the urine it does not exist free except by contamination during collection, but in the great majority of all workers it is present in greater or less amount in the urine, though in a combined state. In properly collected urine, not directly contaminated with T.N.T. dust, T.N.T. solvents fail to extract any of the substance. Its presence may be shown, however, by liberating it by acid from a compound in which it is fixed, when it may be revealed by its ordinary reactions. This urine test will be given in detail below. Further investigation is now in progress, but it would appear probable that free T.N.T. in the intestine is combined in the presence of reducing substances, just as other aromatic bodies in ordinary digestion of proteins are converted to ethereal sulphates, and so eliminated harmlessly by the kidney.

It appears at present best to group the symptoms of the poisoning under the following heads:—

1. Dermatitis.

This appears to be due to a direct irritant action upon the skin. Some persons are more susceptible to it than others; the effects, like those of other irritants, are increased by flushing and perspiration, and by mechanical friction. Further details will be given below.

Some observers have thought that persons specially susceptible to dermatitis are in some rough proportion less susceptible to T.N.T. poisoning in the other ways to be mentioned. If further observations show this to be true, it may be a sign that some skins hold the T.N.T. in combination and suffer local irritation, while other skins allow a readier passage of it to the blood.

Digestive Troubles.

Gastritis, with abdominal pain, vomiting, constipation (a very constant symptom) with flatulence and distension, may all be early symptoms, and may appear in the absence of actual liver degeneration. It would seem probable that T.N.T. may act as an irritant in the stomach or intestines, as it may in the skin, independently of internal toxic effects.

3. Blood Changes.

These appear to be the same in kind as, though less in degree than, those mentioned already for D.N.B. The presence of methæmoglobin may be demonstrated commonly in the blood of workers, though cyanosis and breathlessness are much less evident than in the case of D.N.B. poisoning. Further investigations upon the precise changes in blood are in progress. There seems little reason to doubt that those already recognised are due to a direct action of T.N.T. introduced to the blood as such by absorption from the skin or from mucous surfaces.

4. Liver Degeneration, "Toxic Jaundice."

While the blood changes due to T.N.T. absorption are less noticeable than with D.N.B., T.N.T. appears to produce cell degeneration more readily, with the resulting toxic jaundice when the liver is involved. Even with T.N.T., however, only a small minority of persons under present conditions of work have shown signs of toxic jaundice, and the fatal cases have been few in relation to the great numbers of workers engaged.

Upon the comparison already made between the toxic effects of D.N.B. with those of T.N.T. it may be suggested that the very prominence of blood changes due to the former diminishes, by the attention it arouses, the chance of grave poisoning of the liver, and that in the case of T.N.T. the comparatively small note of warning given beforehand allows toxic jaundice to supervene in a certain number of workers who are not withdrawn in time.

The actual signs and symptoms in particular cases will be varying combinations of those in these groups.

Physical Signs.

Evidence of gradual absorption is shown by pallor of the face and an ashen-grey colour of the lips, tending to

disappear if the worker becomes excited, as by medical examination. Sometimes the lips and tongue are deeply cyanosed. The tongue is generally free from fur. Abdominal distension is usually pronounced.

Jaundice may be conjunctival or general, and often appears suddenly without preliminary warning, rarely before the fourth week of employment. The liver dullness then is variable and no prognosis can be based on it, but it has been known to diminish rapidly towards the termination of a fatal case. The liver area may be tender. Ascites is present in a few cases. Respiratory distress is not noticeable when the patient lies in bed. Pyrexia has occasionally been observed in severe cases, which have eventually recovered. Neither bradycardia nor pruritus is common. Bile is present in the urine—occasionally albuminuria and intermittent glycosuria. In fatal cases coma and delirium supervene suddenly, usually about three weeks after the first appearance of jaundice.

Two deaths have occurred among T.N.T. workers from profound anaemia (unassociated with jaundice) with reduction of the red blood cells to one million per cubic millimetre. Examination of blood films showed the cells of unequal size, but there were no irregular shapes, poikilocytes, or nucleated red blood cells. Microscopical examination excluded pernicious anaemia. The symptoms in one case began with an attack resembling influenza, followed by bleeding from the nose and mouth, petechiae on face, arms, and neck, and swollen gums. In this case the characteristic atrophy of the liver was found post mortem. In the other there was no evidence in the body of the lesions which are associated with hepatic insufficiency. Death resulted from a hæmolytic aplastic anaemia, the amount of the blood-forming marrow having been greatly reduced.

Dermatitis.

Localised rashes, especially where there is pressure or friction, as from bands or ill-fitting clothes, are common. The parts most frequently affected are the hands, wrists, face (particularly round the eyes and chin), the neck, and the feet. On the hands the rash is most frequently of the cheilopompholyx type; sometimes it takes the form of discrete red patches on the backs of the hands and wrists, and on the face and neck usually as a superficial erythema attended with swelling. In whatever form it appears pruritus is intense. Fine desquamation usually follows. In a few cases the skin is exfoliated in large flakes. The character of the rash is frequently altered by a secondary infection through scratching.

Speaking generally, the skin affections due to T.N.T. are not of a severe character and yield readily to the usual treatment for eczema. To allay the itching small doses of quinine have been found useful.

Differential Diagnosis.

So-called T.N.T. poisoning is apt to be confused with gastric disturbance set up by other causes. The history given by a patient is very often misleading. Many of the workers have no idea as to the nature of the substance upon which they are working, and refer to all explosive powders as T.N.T. The staining of the hands is very little guide, as this condition is met with from C.E. (tetryl or tetranitromethylanilin) and lyddite (picric acid or trinitrophenol).¹

The following points are of importance for the diagnosis of T.N.T. poisoning:—

1. The characteristic appearance as previously described.
2. The character and situation of the abdominal pain.
3. The presence of constipation and abdominal distension.

Post-mortem Examination.

The outstanding feature is the atrophy of the liver, which in acute cases is reduced to one-half the normal weight. The outer surface is smooth, reddish in colour, with slightly

elevated gamboze-coloured areas of various sizes. On section in the red areas the tissue is smooth, flat, and firm; the normal lobular pattern is absent, the portal systems being set very close to one another; in the elevated yellow islands the tissue is bulged and soft; an indistinct lobulation is visible, the lobules being larger than normally. Ascites is sometimes present. The bile in the gall-bladder may be unusually viscid. The kidneys on section are enlarged and icteric; the cortex bulges and the labyrinths are frequently conspicuously yellow. There is considerable engorgement of the pyramids.

The myocardium is pale, soft, and flabby. Patechial and diffuse hæmorrhages are generally found beneath the endocardium, the pericardium, and the peritoneum. They have been observed on the skin, on the rib cartilages, and elsewhere in the body.

Microscopical Appearance of the Liver and Kidneys.

Microscopically a great part of the liver tissue is found to have undergone complete destruction associated with a proliferation of fibrous tissue. In these areas the necrosed hepatic cells have almost entirely disappeared. The areas of complete destruction correspond to the sunken red areas seen with the naked eye. Where the destruction is not complete the histological picture is almost identical with that of the early stages of ordinary portal fibrosis. The liver tissue is traversed by fibrous trabeculae enclosing areas of degenerate, partly destroyed parenchyma; in the healthier parenchyma slight regeneration may be present. These areas of incomplete destruction correspond to the raised gamboze-coloured nodules seen with the naked eye. The kidneys show cloudy swelling and fatty degeneration in the tubules.

The jaundice is possibly the result of obstruction, because in sections of the raised areas the bile-dilated intercellular spaces have been found to be confined to the central portions of the lobules, whilst the portal bile-ducts have shown catarrhal degeneration and the portal ductules narrowing or obliteration of their lumina.

Predisposition.

Case incidence and proportion of deaths from toxic jaundice to attacks is little affected by sex. Thirty-three per cent. of recognised and notified cases have proved fatal. The fatality under 18 years of age is striking—eight deaths out of eleven reported attacked. Duration of employment before appearance of jaundice shows remarkable uniformity, at least 83 per cent. of the cases occurring between the fifth and the sixteenth week. In 105 reports on toxic jaundice not one had been employed for a period less than four weeks. Only two fatal cases have been reported where duration of employment had been more than four months, although thousands of workers have worked a much longer time. It would almost appear as though workers could be divided into two classes—the one (and much the larger) insusceptible and remaining so, however much exposed; the other susceptible and liable to succumb, especially between the fifth and fifteenth week. Although there has undoubtedly been some association between unfavourable industrial conditions and the occurrence of cases, fatal poisoning has sometimes occurred where exposure to dust and fumes at any rate appeared to be quite excluded, as, for example, in trolley work outside the building. In one remarkable case the fatal jaundice developed seven weeks after entire cessation from employment, the deceased having apparently been well during the interval. Long delay in onset of symptoms, such as is shown in this case, suggests that T.N.T. is gradually absorbed from some part of the body in which it is temporarily stored.

Channels of Absorption.

The problem of determining the chief path by which T.N.T. enters the body has been worked out in a T.N.T. factory. The T.N.T. test referred to was used in the belief that it afforded evidence of elimination after absorption, and as a sign, therefore, of the unavoidable effect of exposure merely, rather than of poisoning. Probably T.N.T., after it enters, can be eliminated from the body harmlessly in the combined form in which it occurs in the urine. Examining the urine of T.N.T. workers daily for a period of seven weeks, the conclusion came to was that where there is absorption from the skin in susceptible persons the test shows a deeper colour reaction than in absorption from the digestive tract, and this reaction is found to persist for days

¹ The effects of tetryl and picric acid are both liable to be mistaken for T.N.T. and may, in consequence, lead to erroneous notification of toxic jaundice. Both stain the exposed skin—tetryl a yellow to a apricot colour, picric acid a canary yellow or greenish-yellow. They both set up an acute dermatitis, tetryl affecting chiefly the conjunctivæ, the skin of the nose, the sides of the neck, the chin, and, less frequently, the hands; and picric acid the hands and forearms chiefly, very much like T.N.T. Constitutional symptoms from both are slight in comparison with those from T.N.T. No case of toxic jaundice from either has so far been reported, although thousands of workers come in contact with them. Apart from the initial dermatitis (which few handling the substance escape), symptoms of gastritis and breathlessness with diffused heart pulsation have been noted from tetryl.

after removal from exposure. On the other hand, the urine reaction following on ingestion of T.N.T. disappears in less than 24 hours. Absorption through the mouth and by breathing is probably only of less importance because when once work is over these paths of entry are no longer exposed to T.N.T., and the amount absorbed, which is less than that gaining access to the skin, is eliminated before work recommences.

Preventive Measures.

In the manufacture and use of dinitrobenzene before the war need for minimising the dose was well recognised either by arranging for alternation of employment or by allowing the workers such time off as was necessary for their recovery. Experience had shown that long hours of continuous work were impracticable. Similarly in some large factories where the number of workers and the nature of the processes carried on has permitted of systematic alternation of work on T.N.T. with other work away from it, no cases of toxic jaundice have been reported. And in others where on occurrence of cases alternation has been arranged the number notified has fallen. Hence, in considering remedial measures against the danger of T.N.T. in circumstances demanding the utmost output, the aim is, apart from removal of fumes and dust, to employ workers over 18 years of age, to make suitable canteen provision, so that workers can obtain good food on factory premises, to eliminate those showing early signs by frequent medical examination, and to alternate the work or reduce the length of the shift if practicable. Complete protection of the skin is very difficult of attainment, but investigation is being made as to whether this may not perhaps be overcome in another way by the use of solvents such as have been mentioned (benzol, xylol, &c.).

The prophylactic measures adopted, for example, in the Royal Arsenal are as follows:

1. Only persons in good health, and as far as practicable between the ages of 20 and 50, are employed on T.N.T.
2. All workers are inspected by a medical officer once a week.
3. Special clothing is provided, also veils, respirators, and gauntleted gloves.
4. Employment is alternated fortnightly.
5. Adequate ventilation in workshops is arranged for.
6. Mechanical devices are adopted for preventing dust and getting rid of fumes.
7. Workers are warned against sleeping in the clothing worn at the factory, and advised to have a complete change of clothing on reaching home.
8. Facilities are provided for obtaining suitable and sufficient food at proper intervals. Milk is supplied free on the arrival of the workers.
9. Washing of hands and face is insisted upon before meals, and before leaving the factory. Neutral soap and individual towels are provided.

Treatment.

Where jaundice is absent the treatment is simple and satisfactory. The following is the usual procedure adopted at the Royal Arsenal: Removal from contact—rest in bed for a day or two. Diet: Milk, milk puddings, fruit and green vegetables; demulcent drinks, such as barley water, the imperial drink tea and coffee. For the persistent constipation vegetable laxatives and cascara sagrada are employed. A mixture containing sodium sulphate, potassium citrate, and sodium bicarbonate is given as a routine measure.

In the treatment of cases with jaundice absolute rest in bed from the first is essential; milk at first in small quantities, slowly increasing the quantity given to four pints a day. The bowels must be kept loose, preferably by *mixt. alba* repeatedly given to maintain its action if necessary.

In cases of jaundice the prognosis is always grave. Alkali-producing drugs, such as citrates and bicarbonates, are given to counteract the tendency to acid intoxication. Rectal and intravenous saline injections have a definite place in the treatment of severe cases.

LITERATURE.

1. Malden, W.: Some Observations on the Condition of the Blood in Men engaged in Aniline Dyeing and the Manufacture of Nitrobenzene and its Compounds. *Journ. of Hygiene*, 1907, vii., 672; and Minutes of Evidence of Committee on Compensation for Industrial Diseases, Cd. 3496, p. 384.

2. Willcox, W. H.: An Outbreak of Toxic Jaundice, *THE LANCET* 1915, i., 544; and (jointly with Spillbury, B. H., and Legge, T. M.) *Trans. Med. Soc., London*, 1915, xxxviii., 129.

3. Willcox, W. H.: The Treatment of Toxic Jaundice Due to Tetra-Chloro-thane Poisoning, *Brit. Med. Jour.*, 1916, i., 300.

4. Livingstone-Learmonth, A., and Cunningham, B. M.: Observations on the Effects of Trinitrotoluene on Women Workers, *THE LANCET*, 1916, ii., 261.

5. White R. P.: Some New Forms of Occupational Dermatoses, *THE LANCET*, 1916, i., 400.

6. Smith, Enid: The Prevention, Treatment, and Symptoms of Tetryl Dermatitis, *Brit. Med. Jour.*, 1916, i., 618.

7. Health of Munition Workers Committee. Memo. No. 8. Cd. 8214.

8. Hunter, W.: Article on Jaundice in Allbutt and Rolleston's "System of Medicine," iv., Part 1.

9. White, R. P., and Hay, J.: Some Recent Inquiries and Researches into the Poisonous Properties of Naphthalene and the Aromatic Compounds, *THE LANCET*, 1901, ii., 582.

10. White, R. P.: The Effects of Dinitrobenzene and other Nitro-substitution Products of the Aromatic Series on the Workmen Employed in the Manufacture of High Explosives, Oliver's "Dangerous Trades," p. 475.

11. Grimm, V., Heffter, A., und Joachimoglu, G.: Gewerbliche Vergiftungen in Flugzeugfabriken. *Vierteljahrsschr. f. gerichtl. Med. u. öffentl. Sanitätswesen*, 3. Folge, xlviii., Suppl.

ADDENDUM ON A URINARY TEST FOR T.N.T. ILLNESS AND THE EARLY DIAGNOSIS OF CASES SUFFERING FROM T.N.T. ABSORPTION.

It has hitherto been a difficult matter to follow up T.N.T. after it has once entered into the system. The reason is that T.N.T., like many other toxic substances, becomes combined in the body in a reaction which changes it for the time being, and probably renders it less poisonous. Once it has passed into the system and been so dealt with, it is no longer taken up by its well-known solvents, and must be set free again before it can be recognised by chemical tests.

Thus, a sample of urine from a T.N.T. worker loaded up with the altered T.N.T. can be extracted with a T.N.T. solvent, and yet not a trace be discoverable in the extractive. If, however, the substance be first set free with acid, and then extracted with an appropriate solvent, the characteristic reactions of T.N.T. can be obtained from the solution in the extractive.

A considerable experience in testing many hundreds of urinary samples from T.N.T. operatives has led to the following precise way of carrying out the test.

Webster's Test for Presence of T.N.T. in Urine.

Measure out 12½ c.cm. of the urine in a measuring cylinder, then add 12½ c.cm. of diluted sulphuric acid, made up by mixing 20 c.cm. of strong sulphuric acid with 80 c.cm. of water. Pour the mixture of urine and acid into a separating funnel of 100 to 150 c.cm. capacity and provided with a stopcock—add to the mixture 10 c.cm. of ethylic ether (the ordinary ether made from methylated spirit is sufficiently pure for the purpose), shake up well and allow to settle, take out the cork or stopper from the top of the separating funnel, open the stopcock at the bottom and allow the mixture of acid and urine to run off, then turn the stopcock off so as to retain the ethereal solution in the separating funnel. Now add 25 c.cm. of tap water to the ethereal solution in the separating funnel and shake up again to remove the traces of the mixture of urine and acid and allow to settle again for two or three minutes, then run off the water by opening the stopcock, retaining the ether in the funnel. Finally, let the ethereal solution flow into an ordinary test-tube and try for the presence of T.N.T. in it as follows.

Prepare a solution of alcoholic potash by dissolving 4 to 5 grammes of caustic potash in 100 c.cm. of methylated spirit or absolute alcohol. Where many tests are to be carried out this solution may be made by having a stock saturated solution of caustic potash, and adding, when a fresh quantity of the reagent is required, 10 c.cm. of this to 90 c.cm. of alcohol.

To the ethereal solution obtained as above described 5 c.cm. of this alcoholic solution of potash are added. When T.N.T. is present a purple colouration is at once developed, varying in intensity according to the amount of T.N.T. present, from the faintest trace to a deep purple. The colour changes rapidly from the purple to a brown colour, and it has been found that the best results as to intensity are obtained by judging rapidly after the colour is struck.

It is easy for each observer to develop, after a little experience in using the test daily, an arbitrary scale of intensity which will enable him to judge degrees and follow relative intensities in the urine, and thus the effect of measures such as cleansing the patient's clothing and person and removal from contact with T.N.T.

In elaborating the test a scale represented by *trace*, 1, 2, 3, 4, and *intense* has been used. At present it is impossible to construct a better scale, as the colours of comparative solutions of known strength of T.N.T. vary so rapidly, and as the substance isolated from the urine does not behave exactly like T.N.T. Also bodies present in the urine and reagents vary the intensity of colour and speed of fading out. However, in the manner described above a fairly good rough standard of intensity can be obtained serviceable for clinical work and experimental observation.

A little experience enables the observer to carry out the test quite rapidly, and a single test can be made when all is ready in four or five minutes. Where a large number of tests have to be made daily, the chief loss of time is occasioned by waiting for the layer of ether to separate at the top of the mixture. This can be obviated by employing a battery of about eight separating funnels and carrying on from one sample to another while the settlement takes place. The eight ethereal extracts after treatment as above described are run off into eight test-tubes of equal diameter. Another eight test-tubes have previously had marked off upon them roughly about 5 c.cm., and have been filled to this mark with the alcoholic potash, and this is now poured off from each of these latter test-tubes into the ethereal extracts, and the results noted down. Working in this way, 20 to 30 tests may be made in an hour, and comparative results so obtained possess an enhanced value over separate tests until the observer has become well accustomed to making the test.

The test is not a difficult one to perform, and when efficiently carried out demonstrates in nearly all cases of T.N.T. workers the presence of T.N.T. passing through the system, but in very varying degree. Some show scarcely any absorption, others give an intense reaction.

Interpretation.

The judgment on the test and its applications clinically must not be made solely on the intensity of the test. There are many workers on T.N.T. whose urine will give the test intensely at night after working during the day, and before going back to the next shift of work the urine may be quite or almost clear. These are not the persons who are in any immediate danger. The real value of the test is twofold—first, in clinching a doubtful diagnosis on clinical symptoms (previous to the appearance of toxic jaundice); and secondly, in watching the clearance of T.N.T. from the system after isolation from T.N.T., and judging whether isolation and other precautionary measures have been effective.

When there is doubt as to the presence of the early diagnostic symptoms, then the test should be made, and if it gives a fairly high result the patient should at once be taken off work on T.N.T. and the urinary test made if possible daily in the succeeding two or three days.

If the urine clears up within 24 hours, and clinical symptoms confirm this improvement, the case may be either one of the less harmful ones of absorption by swallowing, or not really a case of T.N.T. illness. If, on the other hand, the urinary reaction after removal from work and separation from soiled clothing persists for three or four days, it is almost certain that the case is one of the more serious ones of a susceptible skin, and such a person ought to be permanently removed from T.N.T. work.

In all cases of applying the test, but more particularly in the case of persons removed from work as suffering from T.N.T., care should be taken to judge between accidental contamination of the sample of urine by T.N.T. and T.N.T. which has actually passed through the body. Fortunately this distinction is easily made, because of the way in which the system binds up the T.N.T. Where contamination is suspected, and it is fairly frequent, it may at once be detected by omitting the acid in the above test, and extracting the urine with ether either undiluted or after dilution with an equal volume of water instead of the acid.

When a positive result is obtained without acid it may be set down to contamination from clothing, skin, or hair in the act of passing the urine. The detection of this contamination is in itself valuable, as it shows that the patient has not carried out instructions, and while supposed to be free from contact with T.N.T. is still exposed to it.

Even in such a contaminated urine the degree to which T.N.T. is continuing to be absorbed can still be accurately

followed up. All that it is necessary to do is to shake up the urine, *without the addition of acid*, with ether as described above, when the test in this quantity of ether shows the degree of contamination. This unacidified urine, now free from T.N.T. *due to contamination*, can next be utilized for carrying out the test as to how much is passing through the system.

THE CONTROL OF VENEREAL DISEASES.

Women and Compulsory Notification.

A GROUP of women, influential in different walks of life, recently called upon the Government to institute compulsory notification of venereal diseases as a necessary preliminary to any efficient scheme of dealing with them. We have now received a manifesto in precisely opposite sense, to which a number of well-known women have attached their signature. A women's deputation to the Home Secretary on Dec. 4th, organised by the Women's Freedom League, stated their objection to compulsory notification, compulsory treatment, as well as to the compulsory detention of infective persons in prisons and Poor-law institutions; wilful transmission of disease was, on the other hand, urged by the deputation as an occasion for criminal proceedings. The detention of Poor-law patients was recently approved at the annual meeting of the Association of Poor Law Unions, but the arguments against compulsory notification are well recognised by the medical profession, who are in general accord with the findings of the Royal Commission as to the dangers of compulsion at this stage of the scheme.

County Council Schemes.

Reports are to hand from all parts of the country recording progress made in framing schemes of control. The Newcastle-on-Tyne conference already noted resulted in an agreement to institute treatment centres at Ashington (New Hosp.), Blyth (Knight Memorial Hosp.), Darlington (Hosp. and Disp.), Durham (County Hosp.), Hartlepool (Hosp. and Cameron Hosp.), Newcastle (Royal Infirm.), South Shields (Ingham Infirm.), Stockton and Thornaby (Hosp.), and Sunderland (Royal Infirm.). Westmorland proposes to send patients for special treatment to the Manchester Royal Infirmary, the Local Government Board having authorised the payment by the county council of the railway fares of necessitous patients. The West Riding of Yorkshire proposes treatment centres for the present at Bradford, Leeds, and Sheffield. The Norfolk and Norwich Hospital is to serve the needs of Great Yarmouth, as well as of the city and county. Worcestershire, Leicestershire, Cambridgeshire, and East and West Sussex are also coming forward with schemes.

The London Hospital.

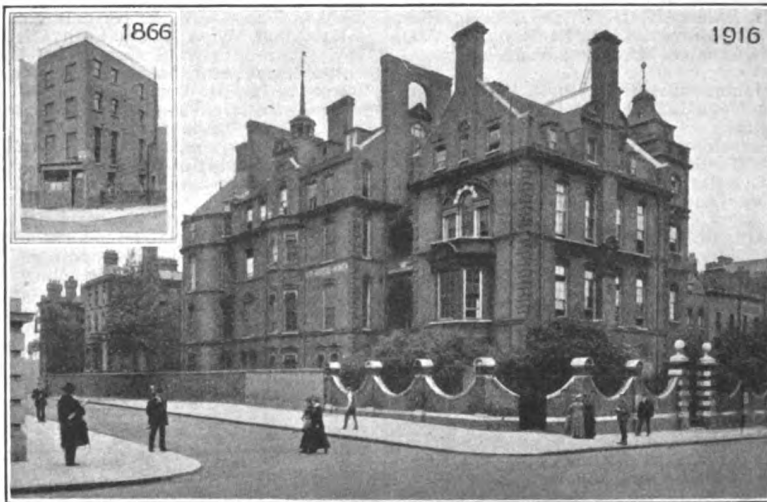
The London Hospital has allotted 15 beds for syphilis, each in a separate room. Four sessions a week will be held in the genito-urinary department, two each for men and women, and in the case of the former attendance is extended to 7 p.m. The hospital is appointing three additional clinical assistants, the number to be further increased by the appointment of local general practitioners.

A FOOD AND DRUGS ACT FOR INDIA.—The Government of India some time ago consulted the local governments on the subject of legislation to prevent the adulteration of food and drugs. The replies received, though not unanimous as to the form which legislation should take, entirely agree on the desirability of further legislation. The adulteration of foodstuffs is widely prevalent throughout India, while the existing law is inadequate to cope with the evil. The Government are, however, averse from passing an All-India Act to check the evil, as such an Act, if it took the form of a mere skeleton or enabling Act, would still leave all real legislation in the hands of the provincial governments. If, on the other hand, the Act descended into details it would require frequent amendment to meet local needs. The Government of India have, therefore, decided that measures shall be taken by the local legislatures, and a circular letter has been addressed to all of these (except that of the United Provinces, which already have a Prevention of Adulteration Act), suggesting the lines on which reform shall be based. In several particulars the Act already in force in the United Provinces is followed. The adulteration of drugs is left for the present to be dealt with under the Indian Penal Code.

THE NEW HOSPITAL FOR WOMEN: JUBILEE CELEBRATION.

THE New Hospital for Women, which celebrates its fiftieth anniversary this week, had its beginning in the St. Mary's Dispensary for Women and Children, which was opened at 72, Seymour-place, London, W., in 1866. Here Elizabeth Garrett (later Mrs. Garrett Anderson), who had obtained a licence from the Society of Apothecaries, took medical charge and remained sole visiting physician until 1870, when she was joined by another lady, Miss Morgan, a medical graduate of the University of Zürich. Up to the end of 1871 over 9000 new patients were treated at the dispensary and numbers of maternity and urgent medical cases at their own homes.

In February, 1872, a small hospital of 10 beds was opened over the dispensary and took the name of New Hospital for Women. In 1875 house property was secured in Marylebone-road, whereby accommodation was increased to 26 beds, and by the end of 1888 more than 3000 in-patients and 35,000 out-patients had been received. At that time Mary D. Scharlieb, a medical graduate of London University, Julia Cock, and Jane Walker, both with the licence of the Royal College of Physicians of Ireland, became members of the medical staff. The site of the present hospital in Euston-road was obtained through the energy of Rev. Llewelyn Davies, the chairman of the hospital. The foundation-stone was laid by the Princess of Wales in 1889 and the hospital opened in 1890 with 40 beds. With the completion of the new wing in 1911 the number of beds reached a total of 71. To relieve pressure on the beds an annexe in the country was then projected and the Rosa Morison House was opened with 20 beds at New Barnet in 1913 as a house of recovery, to which in-patients could be removed as soon as practicable after operation and acute illness.



The New Hospital for Women in 1916.

Inset: St. Mary's Dispensary for Women and Children in 1866.

In the absence of Lady Hall, honorary treasurer of the hospital, Lady Minto presided at the meeting on Tuesday afternoon last to celebrate the jubilee. Queen Alexandra sent a sympathetic message and Queen Amelie of Portugal was present. Sir Alfred Keogh, in an address, spoke of the successful vanquishing by women of the difficulties besetting their entrance into the career of medicine. One of the most notable results of the present war would be the assuring to women of their proper position in medicine and surgery. As far as he knew, women made quite as good physicians and surgeons as men. He went on to deplore the necessity of further hospital accommodation, expressing the hope that the study of sanitation promoted by the war would result in an increase of preventive medicine sufficient to empty some of the existing hospitals. Mrs. Scharlieb paid a warm tribute to the great work done for the hospital by Mrs. Garrett Anderson, and congratulated the hospital on having supplied medical women to all parts of the war area. Sir John Bland-Sutton stated that novelty was not sufficient to attract hospital patients, who were, as a class, peculiarly discriminating. A full hospital with a long waiting list testified to the good work done. He had several times analysed the results of gynaecological operations at the New Hospital for Women and found them equal to those of any

large London hospital. He held that all the hospitals in London should be open to women on the same terms as to men. Dr. Louisa G. Anderson spoke of her mother's belief that the existence of the New Hospital for Women was essential in order to gain for women the highest place in the medical profession.

The jubilee celebration is associated with an appeal for funds to endow fully 50 at least of the existing hospital beds. Communications should be addressed to Lady Hall, honorary treasurer, Jubilee Appeal Fund, New Hospital for Women, Euston-road, London, N.W.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeons: W. O. Sankey, G. S. Sowden, J. E. Clark, and F. Ewart.

ARMY MEDICAL SERVICE.

Temp. Cols. (Lieut.-Cols., R.A.M.C., T.F.) Sir James K. Fowler, K.C.V.O., and F. F. Burghard, C.B., having resigned their appointments relinquish their temporary commissions.

TERRITORIAL FORCE.

Capt. D. J. Scott, London Field Ambulance, to be Deputy Assistant Director of Medical Services, 56th Division.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. (temp. Col.) Joseph F. M. Kelly relinquishes his temporary rank on re-posting.

Lieut.-Col. Robert S. H. Fuhr, D.S.O., to be temporary Colonel whilst employed as an Assistant Director of Medical Services of a Division.

The undermentioned Majors to be temporary Lieutenant-Colonels whilst in command of a Stationary Hospital:—E. B. Knox, H. L. W. Norrington, D.S.O., and L. W. Harrison, D.S.O.

Major Vincent J. Crawford, D.S.O., to be temporary Lieutenant-Colonel whilst in command of a Field Ambulance.

Temp. Major A. H. Carter to be temporary Lieutenant-Colonel.

To be temporary Majors: Temp. Capts. H. MacCormac and G. T. S. Sichel.

Temporary Lieutenants to be temporary Captains: E. A. Pywell, H. A. Hutt, E. Atkinson, F. L. Brown, E. W. L. Sharp, E. A. Shirvell, I. M. Frazer, C. J. Sparrow, D. P. Williams, T. B. Welch, J. Black, W. J. Maloney, A. C. Norman, F. R. Barwell, W. D. A. King, J. Miller, J. O. Garland, W. C. MacFetridge, R. M. L. Anderson, T. D. McLaren, E. A. Scott, S. J. Darke, F. W. Martin, T. W. N. Dunn, J. W. Bennett, E. C. E. Van-Eyck, A. D. Rope, C. W. Ensor, E. L. Massiah, J. H. Cooke, J. A. MacLean, F. B. Hawes, R. A. G. Elliott, W. L. Dibb, H. B. Moyle, H. P. Rogers, W. Barbour, M. MacKenzie, H. L. Flint, P. W. Barker, T. R. Phipps, F. A. Ross, G. T. Foster-Smith, G. McI. Dale, A. R. Riddell, R. I. Harris, C. L. Emmerson, T. M. R. Waddell, G. W. P. Maitland, C. Fraser, G. Laurence, A. R. Hargreaves, J. Spears, H. B. Minshall, A. W. T. Whitworth, V. E. Ridewood, T. Russell, A. W. G. Woodford, E. C. Moore, R. N. Watson, H. Smith, J. Cropper, A. A. Watson, A. C. Fleming, E. McIntyre, R. McRae, F. C. Lees, G. F. Porter, R. B. Hennessy, W. E. Fraser, F. A. Winder, A. Whytt, C. J. L. Patch, R. D. Lemon, W. E. Gemmell, E. W. Longden, A. Mudie, A. J. R.

Taylor, W. T. Munro, A. R. F. Douglas, J. A. Gilfillan, H. E. Robinson, H. H. L. Ellison, W. S. Williamson, S. Infield, H. B. Wilkinson, D. Clow, W. McConnell, D. C. M. Page, L. Levy, G. B. Thwaites, W. D. G. Mulloy, W. G. Galletley, A. D. Low, J. Craig, J. A. Frost, E. H. Freeman, J. Humphreys, D. W. MacLagan, J. A. Black, E. Prall, W. J. E. Stuttaford, E. P. Marett, A. Malseed, G. E. Lindsay, A. Barber, O. D. B. Mawson, G. F. Bird, C. H. Edwards, D. McM. Dickson, R. Anderson, R. H. Shepard, and L. T. Giles.

To be Temporary Captains: H. Mundy (S. African M.C.), T. E. Hincks (late Captain, S. Wales Borderers) (T.F.), W. Parry-Morgan, and L. A. B. Grier, C.A.M.C.

To be Temporary Lieutenants: J. M. Coplans, T. P. Linehan, J. S. Daniell, Temp. Hon. Lieut. H. C. Shockett, J. Laing, J. B. McEwan, L. G. White, H. F. Devis, P. R. McNaught, T. W. Jones, J. Cruickshank, W. Montgomery, P. J. Holmes, T. B. Smith, R. C. de Courcy Wheeler, S. F. Floyd, H. M. Grey, T. S. S. Holmes, J. G. Copland, L. F. Lovell-Keays, J. Chabre, J. A. C. Greene, J. M. Inverarity, J. Pryce-Davies, M. Golding, W. Thomson, G. H. Morris, R. H. Rains, P. McL. Shiels, H. D. Wilson, Temp. Hon. Lieut. W. Simpson, J. E. Murray, Lt. S. H. Glanville, V. C. Montgomery, A. H. Macklin, G. H. Jones, W. D. Kirkwood, and G. T. Birks.

To be Temporary Honorary Lieutenant: R. A. Chisholm, whilst employed with No. 8 British Red Cross (Baltic and Corn Exchange) Hospital.

Temporary Captains relinquishing their commissions:—A. D. Vardon, W. R. MacKenzie, H. C. Highet, J. C. R. Braine-Hartnell, C. J. Kelly, R. Williams, D. Welsh, and J. Braithwaite, K. N. MacLean, and W. E. Bracey (on account of ill-health).

Temporary Lieutenants relinquishing their commissions: L. T. Griffiths, H. T. Marrable, H. W. Nott, R. C. Muir, W. G. Parkinson, J. G. Sharp, J. Bradley-Hughes, H. W. B. Ruxton, E. A. Hutton-Attenborough, D. Anderson, R. G. Chase, T. J. Taunton, H. R. Irvine, J. Logan, P. Kinmont, R. T. Forster, H. E. Barnes, F. W. Hobbs, W. H. Lamplough, G. A. Gordon, J. L. M. Smith, J. Moffat, C. W. W. James, B. W. Jones, O. G. Donovan, J. W. Fox, S. V. Robinson, M. Anthony, W. Roche, H. C. Heathcote, C. A. Hughes, R. L. Keown, A. T. M. Blair, J. D. Curtis, L. H. Douglass, C. R. Totton, H. M. D. Townsend, J. H. Nixon, H. H. Fairfax, H. Holt, H. O'Neill, E. F. Buckler, G. H. H. Almond, F. C. Carlé, H. C. Miller, R. Kenyon, L. J. Hood, C. H. G. Gostwyck, T. E. Dobbs, and M. Davies.

SPECIAL RESERVE OF OFFICERS.

To be Lieutenants: H. Morley, R. F. Jarrett, J. W. G. Steell, A. W. B. Davies, and C. Young (from University of London Contingent, O.T.C.), A. R. Balmain, Second Lieut. Arthur Rodd (from Unattached List, T.F., O.T.C.), E. Newton, J. S. White, A. Duguid, B. H. Simon (from Edinburgh University Contingent, O.T.C.), and G. S. Lawrence (from Aberdeen University Contingent, O.T.C.).

TERRITORIAL FORCE.

London Field Ambulance: Capt. F. V. Denne relinquishes his commission on account of ill-health.

Home Counties Field Ambulance: Capt. B. R. Billings resigns his commission.

Home Counties Casualty Clearing Station: Lieut. W. Burt to be Captain.

London General Hospital: Major F. F. Burghard, C.B., is restored to the establishment.

East Lancashire Field Ambulance: Lieut. J. Young to be Captain.

West Lancashire Field Ambulance: Capt. R. Starkey-Smith to be Major.

Attached to Units other than Medical Units.—Lieut. John R. Bulman and G. H. Gill to be Captains. K. Atkin to be Lieutenant.

TERRITORIAL DECORATION.

The King has conferred the Territorial Decoration upon the following officers holding the rank of Major: Majors W. E. Miles, J. Wilson (attached Royal Engineers), temp. Lieut.-Col. H. A. Rudyard, W. Lewis Martin (attached Royal Scots), C. R. Bishop (attached Somerset Light Infantry), A. H. Vernon (attached Hampshire Regiment), and T. W. Banks (attached Highland Light Infantry).

INDIAN MEDICAL SERVICE.

The King has approved the promotion of the following officers:—

Captains to be Majors: H. S. Matson, F. H. Stewart, A. Cameron, A. H. Proctor, R. T. Wells, I. M. Macrae, and F. B. Shettle.

The King has also approved the grant of the temporary rank of Lieutenant in the Indian Medical Service to the undermentioned: Albert Francis Winnington-da-Costa, Indra Datt Gupta, Ikram Ali Sufi, Dhanjiskaw Dordbi Mogul, Manohar Lal Bhagat, Kirpa Sundar Basu, Gopaladas Malhoutra, Manohar Lal Bhargawa, Narendra Singh Bhai,

Ram Narayan Sewal, Yajaman Viswanath Ayya, Maharaj Das, Narayanrao Marntirao Chavan, Shripad Bhaskar Gonthakar, Dadabhoj Dinshaw Variava, Kharg Bahadur Singh Karki, Frank Rodrigues, Syed Abdul Karim, Gokul Prasad Tiwari, Joy Gopal Mukharji, Gerald Secluna, Mugatali Damodardas Munim, Ignatius Fonseca, William Austin Reardon, Prabhat Chandra Mukerji, Girdharilal Dharmdas Mehta, Royapuram Nellaveran Raja, Esardas Bulchand Gidwani, Jahangir Ratanji Wadia, Mithilesh Chandra Ghosh, Hari Pada Mukerji, Narayan Ram Chandra Summanwar, Ram Nayaran, Pennathur Krishnaswami, Nathaniel Benjamin Morris, Nadiarni Mangesh Rao, Dharm Chand Nangpaul, Terunageswaram Valaydam Pillai Rajaratnam, Nellayappa Navanitha Krishnan, Bhagwan Das Uberoi, Jotindranath Chowdhury, Ardeshir Dadabhoj Shroff, Sadasheo Gopal Paonaskar, Tirath Ram Khanna, Gurdas Ram, Shyam Behari Lal, Shridhar Atmaram Phatak, Som Butt, Suresh Chandra Mukerjee, Arunaphala Sastriar Krishnamurti, Nain Singh, Bhaskar Ramchandra Chandorkar, Darabsha Rustomji Khara, Chandragiri Rangabhashyam, Benarsi Das, Pukazhi Raghava Warivar, Prem Nath Dogra, Munshi Ram Gupta, L. Htin Poh, Vidya Bhushan, Piyara Lal Bhal, Manekshaw Dady, Dharendra Nath Gupta, Lal Chand Khanna, Edwin Walter Marsh, and Joseph Clement Sampson.

Capt. A. B. H. Bridges, R.A.M.C., has been appointed Surgeon to His Excellency the Commander-in-Chief in India. Major L. T. R. Hutchinson has been appointed as Presidency Surgeon, Second District in Bombay. Lieut.-Col. H. Austen Smith, surgeon to His Excellency the Viceroy, has succeeded Major L. Cotterill, R.A.M.C., as Surgeon to the Viceroy and as Honorary Secretary to the Central Committee of the Countess of Dufferin's Fund. Lieut.-Col. Timmings, port health officer, Bombay, has been promoted to Colonel and appointed Assistant Director of Medical Services, Poona, relieving Colonel Mollesworth, C.I.E., who will proceed to Simla, to act as deputy director, Medical Services, Army Headquarters. Brevet-Col. F. Cleveland has been transferred from the office of Director, Medical Services, India, to act as Deputy Director-General, Indian Medical Service.

DEATHS IN THE SERVICES.

Deputy-Surgeon-General J. McElwee, R.N., at the Royal Naval Hospital, Haslar, on Dec. 9th. He qualified M.D., M.Ch., at the Royal University of Ireland in 1887, and joined the Royal Navy soon after. He saw service in the Gambia Expedition in 1891-92, and was awarded the Ashantee medal and clasp.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census 7043 births and 5213 deaths were registered during the week ended Saturday, Dec. 2nd. The annual rate of mortality in these towns, which had been 13.3, 13.0, and 15.4 per 1000 in the three preceding weeks, rose to 15.7 per 1000 in the week under notice. During the first nine weeks of the current quarter the mean annual death-rate in these towns averaged 13.3, against 13.4 per 1000 in London. Among the several towns the death-rate during the week ranged from 7.6 in Lincoln, 8.3 in Wimbledon, 8.7 in Grimsby, 9.1 in West Bromwich, and 10.0 in Eastbourne and in Stockport, to 21.7 in Barfley, 22.8 in Burnley, 24.8 in Great Yarmouth, 26.3 in Exeter, and 26.4 in Sunderland.

The 5213 deaths from all causes were 85 above the number in the previous week, and included 223 which were referred to the principal epidemic diseases, against 241 and 210 in the two preceding weeks. Of these 228 deaths, 104 resulted from infantile diarrhoeal diseases, 50 from diphtheria, 47 from measles, 16 from whooping-cough, 7 from scarlet fever, and 4 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 0.7, against 0.6 per 1000 in the previous week. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had steadily declined from 477 to 105 in the 11 preceding weeks, numbered 104, and included 29 in London, 7 in Liverpool, 6 in Birmingham, and 4 in Newcastle-on-Tyne. The deaths referred to diphtheria, which had been 60, 56, and 45 in the three preceding weeks, rose to 50, of which 14 occurred in London and 3 each in West Ham, Liverpool, Manchester, and Sheffield. The fatal cases of measles, which had been 26, 40, and 29 in the three preceding weeks, rose to 47, and included 19 in London, 4 in Coventry, and 3 each in Liverpool, Manchester, and Oldham. The deaths attributed to whooping-cough, which had been 17, 12, and 14 in the three preceding weeks, rose to 16, and included 2 each in Birmingham, St. Helens, and Sunderland. The 7 deaths from scarlet fever, of which 2 were

registered in London, were 2 below the average in the earlier weeks of the quarter. The fatal cases of enteric fever, which had been 11 in each of the three preceding weeks, fell to 4, but showed no excess in any particular town.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 1171, 1170, and 1123 at the end of the three preceding weeks, further fell to 1037 in the week under notice; 120 new cases were admitted during the week, against 157, 131, and 120 in the three preceding weeks. The cases of diphtheria, which in the 11 preceding weeks had increased from 1262 to 1534, fell to 1550; 171 new cases were admitted during the week, against 202, 193, and 195 in the three preceding weeks. These hospitals also contained 127 cases of measles, 42 of enteric fever, and 39 of whooping-cough, but not one of small-pox. The 1379 deaths from all causes in London were 74 in excess of the number in the previous week, and corresponded to an annual death-rate of 16.7 per 1000. The deaths referred to diseases of the respiratory system, which had increased from 132 to 294 in the six preceding weeks, further rose to 337 in the week under notice.

Of the 5213 deaths from all causes in the 96 towns, 215 resulted from violence, 447 were the subject of coroners' inquests, and 1455 occurred in public institutions. The causes of 41, or 0.8 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Sheffield, Leeds, West Ham, Bradford, Newcastle-on-Tyne, and in 67 other smaller towns. Of the 41 uncertified causes, 9 were registered in Liverpool, 3 each in Birmingham and St. Helens, and 2 each in Coventry, Preston, South Shields, Gateshead, and York.

In the 96 English and Welsh towns 6891 births and 5912 deaths were registered during the week ended Saturday, Dec. 9th. The annual rate of mortality, which had been 13.0, 15.4, and 15.7 per 1000 in the three preceding weeks, further rose in the week under notice to 17.8 per 1000 of their aggregate civil population estimated at 17,312,295 persons for the year 1915. During the first ten weeks of the current quarter the mean annual death-rate in these towns averaged 13.7, against 14.1 per 1000 in London. Among the several towns the death-rate last week ranged from 7.6 in Lincoln, 9.2 in Wallasey, 9.7 in Wigan, 10.2 in Wimbledon, and 11.1 in Enfield, to 23.8 in Norwich, 24.0 in Carlisle, 24.6 in Bournemouth, 24.8 in Great Yarmouth, and 33.1 in Hastings.

The 5912 deaths from all causes were 699 in excess of the number in the previous week, and included 226 which were referred to the principal epidemic diseases, against 210 and 228 in the two preceding weeks. Of these 226 deaths, 83 resulted from infantile diarrhoeal diseases, 56 from measles, 47 from diphtheria, 23 from whooping-cough, 9 from enteric fever, and 8 from scarlet fever, but not one from small-pox. The annual death-rate from these diseases was equal to 0.7 per 1000, and coincided with that recorded in the previous week. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had declined from 477 to 104 in the 12 preceding weeks, further fell to 83, and included 33 in London, 6 in Liverpool, 4 each in Birmingham and Rhondda, and 3 in Sheffield. The deaths attributed to measles, which had been 40, 29, and 47 in the three preceding weeks, rose to 56, of which 25 occurred in London, 5 in Edmonton, 4 each in Coventry and Manchester, and 3 each in East Ham and Birkenhead. The fatal cases of diphtheria, which had been 56, 45, and 50 in the three preceding weeks, fell to 47, and included 16 in London and 3 in West Ham. The deaths attributed to whooping-cough, which had been 12, 14, and 16 in the three preceding weeks, further rose to 23, of which 4 were registered in London and 2 each in Bristol, Leicester, and Barnsley. The deaths referred to enteric fever, which had been 11, 11, and 4 in the three preceding weeks, rose to 9, but showed no excess in any particular town. The 8 fatal cases of scarlet fever, of which 2 occurred in Sunderland, were equal to the average in the three preceding weeks.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had declined from 1171 to 1087 in the four preceding weeks, further fell to 1047 on Saturday last; 103 new cases were admitted during the week, against 131, 120, and 120 in the three preceding weeks. The cases of diphtheria numbered 1513, against 1556, 1584, and 1550 at the end of the preceding three weeks; 169 new cases were admitted, against 193, 195, and 171 in the three preceding weeks. These hospitals also contained on Saturday last 154 cases of measles, 45 of whooping-cough, and 36 of enteric fever, but not one of small-pox. The 1683 deaths from all causes in London were 304 above the number in the previous week, and corresponded to an annual death-rate of 20.4 per 1000. The deaths referred to diseases of the respiratory system, which had steadily increased from 132 to 337 in the

seven preceding weeks, further rose to 400 in the week under notice. The deaths from influenza numbered 55, against 17 and 41 in the two preceding weeks.

Of the 5912 deaths from all causes in the 96 towns, 220 resulted from violence, 484 were the subject of coroners' inquests, and 1681 occurred in public institutions. The causes of 51, or 0.9 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Sheffield, Leeds, Bristol, West Ham, Bradford, and in 68 other smaller towns. Of the 51 uncertified causes, 10 were registered in Birmingham, 7 in Liverpool, 4 in Bury, and 3 each in South Shields and Gateshead.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year 950 births and 626 deaths were registered during the week ended Saturday, Dec. 2nd. The annual rate of mortality, which had been 14.5, 13.9, and 15.4 per 1000 in the three preceding weeks, fell to 13.8 per 1000 in the week under notice. During the first nine weeks of the current quarter the mean annual death-rate in these towns averaged 14.0, against 13.3 per 1000 in the large English towns. Among the several towns the death-rate during the week ranged from 6.2 in Motherwell, 8.0 in Clydebank, and 8.6 in Perth, to 16.0 in Hamilton, 19.4 in Dundee, and 22.2 in Leith.

The 626 deaths from all causes were 74 below the number in the previous week, and included 45 which were referred to the principal epidemic diseases, against numbers increasing from 38 to 53 in the three preceding weeks. Of these 45 deaths, 16 resulted from measles, 10 from infantile diarrhoeal diseases, 9 from diphtheria, 6 from whooping-cough, and 4 from scarlet fever, but not one from small-pox or from enteric fever. The annual death-rate from these diseases was equal to 1.0, against 0.7 per 1000 in the large English towns. The deaths attributed to measles, which had been 8, 9, and 20 in the three preceding weeks, fell to 16, and comprised 11 in Dundee, 4 in Glasgow, and 1 in Edinburgh. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had been 13, 18, and 18 in the three preceding weeks, fell to 10, and included 4 in Glasgow and 3 in Dundee. The fatal cases of diphtheria, which had been 5, 8, and 9 in the three preceding weeks, were again 9 in the week under notice, and included 2 each in Glasgow and Dundee. The 6 deaths attributed to whooping-cough, of which 4 occurred in Glasgow, were 3 in excess of the average in the earlier weeks of the quarter. The 4 deaths from scarlet fever were slightly below the average in recent weeks, and included 2 in Glasgow.

The deaths referred to diseases of the respiratory system, which had increased from 74 to 131 in the six preceding weeks, fell to 118 in the week under notice, and were 173 below the number registered in the corresponding week of last year. The deaths from violence numbered 26, against 38 and 27 in the two preceding weeks.

In the 16 largest Scotch towns 971 births and 747 deaths were registered during the week ended Saturday, Dec. 9th. The annual rate of mortality, which had been 13.9, 15.4, and 13.8 per 1000 in the three preceding weeks, rose to 16.4 per 1000 in the week under notice. During the first ten weeks of the current quarter the mean annual death-rate in these towns averaged 14.3, against a corresponding rate of 13.7 per 1000 in the large English towns. Among the several towns the death-rate during the week ranged from 8.9 in Kirkcaldy, 9.2 in Coatbridge, and 11.1 in Motherwell, to 18.7 in Perth, 21.0 in Kilmarnock, and 21.4 in Dundee.

The 747 deaths from all causes were 121 in excess of the number in the previous week, and included 38 which were referred to the principal epidemic diseases, against 53 and 45 in the two preceding weeks. Of these 38 deaths, 14 resulted from infantile diarrhoeal diseases, 12 from measles, 6 from diphtheria, 3 from whooping-cough, 2 from scarlet fever, and 1 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 0.8, against a corresponding rate of 0.7 per 1000 in the large English towns. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had been 18, 18, and 10 in the three preceding weeks, rose to 14, and included 5 in Glasgow, 3 in Edinburgh, and 2 in Dundee. The deaths referred to measles, which had been 9, 20, and 16 in the three preceding weeks, fell to 12, and comprised 8 in Dundee and 4 in Glasgow. The fatal cases of diphtheria, which had been 8, 9, and 9 in the three preceding weeks, fell to 6, but showed no excess in any particular town. The deaths attributed to whooping-cough, which had been 5, 1, and 6 in the three preceding weeks, fell to 3, and were recorded in Glasgow, Coatbridge, and Kilmarnock respectively. The fatal cases of scarlet fever occurred in Glasgow and Hamilton, and that of enteric fever in Dundee.

The deaths referred to diseases of the respiratory system, which had been 118, 131, and 118 in the three preceding

weeks, rose to 155 in the week under notice, but were 56 below the number registered in the corresponding week of last year. The deaths from violence numbered 26, against 27 and 26 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the registration area of Dublin 206 births and 135 deaths were registered during the week ended Saturday, Dec. 2nd. The annual rate of mortality, which had been 21.3, 17.7, and 20.1 per 1000 in the three preceding weeks, fell to 17.7 in the week under notice, against corresponding rates of 16.7 and 14.3 per 1000 in London and Glasgow respectively.

The 135 deaths at all ages included 30 of infants under 1 year and 42 of persons aged 65 years and upwards. Four deaths (of infants under 2 years) were referred to diarrhoeal diseases, 2 to enteric fever, and 1 to measles. The causes of 3 deaths were uncertified, and 1 other was the subject of a coroner's inquest, while 45, or 33 per cent., of the total deaths occurred in public institutions.

During the same period 163 births and 126 deaths were registered in the city of Belfast. The deaths corresponded to an annual rate of 16.8, or 1.0 per 1000 above that recorded in the previous week, and included 10 of infants under 1 year and 30 of persons aged 65 years and upwards. One death each was referred to enteric fever, measles, whooping-cough, diphtheria, and infantile diarrhoea. The causes of 3 deaths were uncertified, 4 inquests were held, and 41 of the total deaths occurred in public institutions.

In the registration area of Dublin 139 births and 156 deaths were registered during the week ended Saturday, Dec. 9th. The annual rate of mortality, which had been 17.7, 20.1, and 17.7 per 1000 in the three preceding weeks, rose to 20.5 in the week under notice, against corresponding rates of 20.4 and 16.5 per 1000 in London and Glasgow respectively.

The 156 deaths at all ages included 30 of infants under 1 year and 51 of persons aged 65 years and upwards. Three deaths (of infants under 2 years) were referred to diarrhoeal diseases, and 1 each to measles, scarlet fever, and diphtheria. The causes of 9 deaths were uncertified, and those of 5 others were the subject of coroners' inquests, while 68, or 44 per cent., of the total deaths occurred in public institutions.

During the same period 148 births and 112 deaths were registered in the City of Belfast. The deaths corresponded to an annual rate of 15.0, or 1.8 per 1000 lower than that recorded in the previous week, and included 18 of infants under 1 year and 26 of persons aged 65 years and upwards. Two deaths were referred to infantile diarrhoea and 1 each to measles and diphtheria. The causes of 2 deaths were uncertified, and those of 11 others were the subject of coroners' inquests, while 31 of the total deaths occurred in public institutions.

EXEMPTION OF AN UNREGISTERED DENTIST.—An application by an unregistered dentist for exemption on the grounds of national interest and serious hardship was recently heard by the Central Appeal Tribunal. The man claimed to be the only practical dentist in the district and stated that no registered dentists were in residence there. The Central Tribunal granted him exemption conditionally on his remaining in his present occupation, basing their decision on the ground that as the man had a substantial practice of good repute, and as in the absence of other dentists, registered or unregistered, the loss of his services would be seriously detrimental to the health of the community, it was expedient in the national interest that he should continue to be engaged in his civil employment.

THE LATE DR. GEORGE ALBERT TURNER.—Dr. G. A. Turner, late medical officer to the Witwatersrand Native Labour Association, died recently at Johannesburg, in his forty-second year, from heart failure following malarial fever. He was the son of the late Sir George Turner, the distinguished authority on tropical hygiene who, it will be remembered, fell a victim to leprosy contracted in the course of his work. Dr. Turner received his medical education at Aberdeen University, where he graduated M.B., Ch.B., in 1897, obtaining the D.P.H. in the following year. Subsequently he went to South Africa, and was appointed medical officer to the Grahamstown Lunatic Asylum. After serving in the Boer War, he was engaged in public health work at Cape Town and at Kimberley until he received his appointment with the Witwatersrand Native Labour Association in 1905. In 1908 he obtained the Craig scholarship of the London School of Medicine for a monograph on the Intestinal Parasites of South African natives. The body was interred on Oct. 29th in Brixton Cemetery, where a large number of friends and official representatives gathered to pay their last respects to one who, like his father, died as a consequence of devotion to his profession.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Missing, believed Drowned.

Lieut. J. Cropper, R.A.M.C., was educated at Cambridge and at St. Bartholomew's Hospital, and qualified in 1892. He had held appointments at the Huddersfield Infirmary and at the Royal London Ophthalmic Hospital, and later was in practice at Chepstow, Monmouthshire, and joined the R.A.M.C. in November last year. He was on the hospital ship *Britannic* when she was torpedoed, and is reported to have been drowned.

Wounded.

Capt. P. Smith, M.C., R.A.M.C., attached Gloucester Regt.
Capt. W. H. Payne, R.A.M.C.
Capt. H. S. A. Alexander, R.A.M.C., attached West Yorkshire Regt.
Capt. G. B. MacGregor, R.A.M.C., attached Manchester Regt.

THE HONOURS LIST.

The following awards to medical officers are announced:—

Distinguished Service Order.

Major Philip Burnett, Canadian A.M.C.

For conspicuous gallantry and devotion to duty. He took over the command of the bearers at the front and for 48 hours carried out his duties with great skill and determination under very heavy fire.

Military Cross.

Temp. Capt. Mark Blakiston Baines, R.A.M.C.

For conspicuous gallantry and devotion to duty. He tended the wounded under very heavy fire, displaying great courage and determination. He rescued several men who were buried. He has on many previous occasions done fine work.

Capt. Frederick William Brunker, R.A.M.C.

For conspicuous gallantry in action. He continuously went into the open under very heavy fire and attended to the wounded. He displayed great courage and determination throughout.

Temp. Capt. Arthur Barrett Cardew, R.A.M.C.

For conspicuous gallantry and devotion to duty. He tended the wounded under heavy fire throughout the action, displaying great courage and determination.

Temp. Capt. Ralph Annesley Fuller, R.A.M.C.

For conspicuous gallantry and devotion to duty. He led stretcher parties and tended the wounded under intense fire. He displayed great courage and determination throughout the operations.

Temp. Capt. Allen Coulter Hancock, R.A.M.C.

For conspicuous gallantry and devotion to duty. He led a rescue party in the open under heavy fire and rescued 28 wounded men. He displayed great courage and determination throughout the operations.

Temp. Capt. Robert Welton Hogg, R.A.M.C.

For conspicuous gallantry and devotion to duty. With a party of stretcher-bearers he searched the forward area under very heavy fire and brought in many wounded. He has previously done fine work.

Temp. Capt. Edmund Basil Jardine, R.A.M.C.

For conspicuous gallantry and devotion to duty. He tended the wounded continuously for three days and nights under heavy fire, displaying great courage and determination. He has done fine work throughout the campaign.

Temp. Capt. James La Fayette Lauder, D.S.O., R.A.M.C.

For conspicuous gallantry and devotion to duty. He repeatedly with different parties of stretcher-bearers searched the forward area under intense fire and brought in many wounded men. He had previously done fine work.

Capt. Robert Gerald McElney, R.A.M.C.

For conspicuous gallantry and devotion to duty. He led stretcher parties and worked in the open under heavy fire continuously for 34 hours. He set a splendid example of courage and determination.

Temp. Capt. Wilfred McFarlane, R.A.M.C.

For conspicuous gallantry and devotion to duty. He led a stretcher party across "No Man's Land" and attended to the wounded. He worked unceasingly throughout the operations under heavy fire, and set a splendid example.

Temp. Capt. Henry Strawson Turner, R.A.M.C.

For conspicuous gallantry and devotion to duty. He led stretcher parties and tended the wounded under intense fire. On one occasion he rescued eight wounded men in the open.

Bar to the Military Cross.

Temp. Capt. James Henry Fletcher, M.C., R.A.M.C.

For conspicuous gallantry and devotion to duty. He led parties of stretcher-bearers in the open under heavy fire. He displayed great courage and determination throughout the operations. (The award of the Military Cross was recorded in THE LANCET of Jan. 22nd, 1916.)

OBITUARY OF THE WAR.

VICTOR JOHN RUTTLEDGE, M.B., B.CH. DUB.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain V. J. Ruttledge, who died on active service on Nov. 3rd, was youngest son of the late Rev. John Young Ruttledge, D.D., ex-Fellow of Trinity College, Dublin.



He received his own medical education at Trinity College, qualifying in 1891, and was appointed in the following year assistant medical officer to the District Asylum, Londonderry, where he had more than 20 years' service. He made two voyages to China on account of indifferent health and was superannuated at the end of 1912. In May, 1915, however, he

applied for a commission in the Royal Army Medical Corps, and was sent to the Near East. He died of peritonitis at Suez.

ARTHUR REGINALD HART.

Sub-Lieutenant A. R. Hart, who was killed in action on Nov. 13th at the age of 25, was educated at Christ's Hospital, and when war broke out was a fourth-year medical student at Westminster Hospital. He volunteered as a dresser in the French Red Cross, remaining abroad for 14 months, during part of which time he acted as probationer-surgeon at a base hospital. He then joined the R.N.V.R., of which he was an officer at the time of his death.

THE "VIA DOLOROSA" OF THE SOLDIER.

This is the title of an admirable article by Lieutenant-Colonel Guy N. Stephen, R.A.M.C., in the current number of the *Journal of the Royal United Service Institution*. Colonel

Stephen begins by pointing out—what is perhaps too often overlooked—that the collection and disposal of the wounded is only a section of a really efficient army medical department such as ours now is. Nevertheless, the care of the wounded has both an individual and a collective aspect; the wounded soldier must be given his best chance of recovery, and the moral of the troops must not be depressed by the sight of unheeded suffering. He indicates the degree of success attained by the fact that within 48 hours of any big engagement hundreds of men who have taken part in it may be seen leaving Charing Cross Station on their way to complete their treatment in hospitals in their



Waiting for the Wounded. By Muirhead Bone.

(From Part I. of "The Western Front," published by *Country Life*.)

own country. He then describes the successive stages of the dolorous journey of the soldier from "out in front" to the regimental aid-post, the advanced dressing station, field ambulance headquarters, casualty clearing station, and so to hospital barge or base hospital.

GODFREY ALAN WALKER, M.B. LOND.,
SURGEON, ROYAL NAVY.

Surgeon G. A. Walker, who was killed in action on Nov. 14th, at the age of 28, was second son of John Henry Walker, of Mi-field, Yorks, and Rhosneigr, Anglesey. He was educated at Epsom College, where he gained a scholarship, and went on from there to the Medical School of the London Hospital. After taking the qualification of the Conjoint Board, he filled resident posts at the Royal Infirmary, Sheffield, and the Baythorpe Infirmary, resigning the latter in August, 1914, when he volunteered for service. He was 12 months at Cromarty, and then in Gallipoli and France, where he worked until killed by a shell along with two stretcher-bearers as he was attending the wounded.

Surgeon Walker was a keen hockey-player and captain of his hospital team. He was a good sailor, and at Rhosneigr his friends enjoyed many a sail with him in small craft. His senior officer writes of his good work in Gallipoli before and during the evacuation: "We always said of him that the greater the danger the cooler he got, and he could always be depended on in a tight corner."



DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Lieut. A. M. Jones, Scots Guards, second son of the late Dr. A. O. Jones, of Harrogate.
T. D. Mugliston, Australian Infantry, second son of the late Dr. H. B. Mugliston, of Sydney, Australia.

Our illustration is from "The Western Front," of which *Country Life* publishes the first part to-day. In it Mr. Muirhead Bone pictures three surgeons of a divisional collecting station waiting the arrival of the first laden stretcher-bearers. As the advanced dressing station is generally exposed to shell-fire, and is therefore underground or in some sheltered locality, we may take the picture to represent part of a casualty clearing station. A good

insight into the important rôle played by this portion of the "net spread by the R.A.M.C. over the field of war" is also to be gained from the chapter on "The War Doctors" in Lord Northcliffe's recent book, "At the War" (Hodder and

Stoughton, 1916. Pp. 288. Price 5s. net), of which the sale is stated to be bringing in £100 daily to the funds of the Red Cross.

The arrival last Saturday of the hospital ship *St. Denis*, bringing 100 maimed British prisoners exchanged by Germany on account of total and permanent disablement, is a reminder that the dolorous journey may be yet longer and more wearisome, as a large proportion of these men were wounded two and a quarter years ago during the retreat from Mons.

MENTIONED IN DESPATCHES.

In a despatch received from Lieutenant-General G. F. Milne, C.B., D.S.O., Commanding the British Salonica Army, and dated Oct. 8th, 1916, the following references to the medical services occur:—

I desire specially to acknowledge the excellent work rendered by Surgeon-General H. R. Whitehead, C.B., and all ranks of the medical services under his command during a period in which sickness was prevalent. All branches of the Royal Army Medical Corps and the Canadian Army Medical Corps deserve the greatest commendation and have fully maintained their high traditions of efficiency.

The medical services have been called upon to face problems of great difficulty. It can be easily realised that in a climate varying from severe cold to intense damp heat, and in a mountainous country deficient in water, poorly supplied with roads, without local resources, and where dysentery and malaria are rife, the duties and responsibilities of these services must necessarily be heavy. Experiments as to the most efficacious types of mountain ambulance transport had been conducted in the winter and spring, and as a result travois, mule litters, and caecolets now form integral portions of each field ambulance.

During the same period exhaustive measures were taken for an antimalarial campaign. Officers with special knowledge were appointed to supervise antimalarial work; swampy areas were drained and the defensive lines then held carefully surveyed with a view to only the most healthy portions being held. Although malaria has still been the prevailing disease, yet I feel certain that these careful precautionary measures have been greatly instrumental in lessening its intensity. The move to the valley of the Struma in June tested all the preparations made, and severely tried the medical resources. The area occupied was found to be highly malarious, the heat intense and damp, and the single road from the base long, hilly, and of uneven surface. The organisation of this line of evacuation and the arrangement of halting-places and refilling points was, however, successfully undertaken.

The work performed by the motor ambulance convoys was invaluable. Running practically continuously, they succeeded in coping with the calls made upon them, difficulties were minimised by the forethought and energy displayed, and the sick were transferred with satisfactory expedition to the base hospitals.

The preparations for offensive operations on the Dolran front towards the end of July necessitated further developments in the rearward medical services. Efficient ambulance railway trains were improvised from local rolling-stock, and a railway line of evacuation organised. From the eastern extremity of the British line of defence evacuation by sea is the only feasible course. Three distinct systems are therefore in operation at one and the same time, by railway, by road, and by sea, all converging on one base.

When active operations commenced the rôles of the various forms of mountain ambulance transport organised for the field ambulances became apparent. On open hill-sides, along the beds of ravines, over slopes covered with scrub, relay parties of stretcher-bearers, travois, litters and caecolets, conveyed the wounded back to the dressing stations. The use of improvised methods in action shows vividly the special conditions under which the medical services of the army have been called upon to work, and has necessitated the closest co-operation between staffs and medical units.

The advice of the consultant physicians and surgeons, and of the medical experts who have visited this army, has considerably aided in the maintenance of a high standard of technical efficiency. The close touch in matters of sanitation between the medical services of field formations, the staff, and unit commanders, has been of the greatest benefit in maintaining the health and comfort of the troops.

I cannot conclude my remarks on the medical services without paying testimony to the devoted service rendered by the nursing sisters belonging to the various hospitals. By their skill, care, and attention at a time of great stress under trying climatic conditions the sufferings of the patients have been largely alleviated.

I further wish to thank the British Red Cross Society and Order of St. John for its help and assistance. The Commissioner, Mr. H. Fitzpatrick, has been indefatigable in his endeavours for the welfare and comfort of the sick and wounded in both the base hospitals and field units.

The names of the following medical officers are given as deserving of special mention:—

Staff.—Surg.-Gen. H. R. Whitehead, C.B.
Army Medical Service.—Col. A. A. Sutton, D.S.O.; Col. M. P. C. Holt, C.B., D.S.O.; Col. G. T. Rawnsley, C.M.G.; Temp. Col. J. P. Stewart, C.B., Captain, 4th London General Hospital, R.A.M.C. (T.F.); and Temp. Col. T. C. English, Captain, 4th London General Hospital, R.A.M.C. (T.F.).

Royal Army Medical Corps.—Bt. Col. (temp. Col.) F. Smith, C.M.G., D.S.O.; Lieut.-Col. J. R. Whait; Lieut.-Col. (temp. Col.) P. MacKessack; Lieut.-Col. (temp. Col.) W. H. S. Nickerson, V.C., C.M.G.; Lieut.-Col. A. R. Aldridge, C.S.I. (Res. of Off.); Lieut.-Col. J. C. Connor; Lieut.-Col. S. H. Withers; Lieut.-Col. L. F. Smith; Lieut.-Col. E. T. F. Birrell, C.M.G.; Lieut.-Col. M. M. Lowale; Lieut.-Col. F. Ashe; Major (temp. Lieut.-Col.) S. L. Pallant; Major

(temp. Lieut.-Col.) C. W. Holden; Major J. T. Johnson; Major G. Ormrod; Major E. L. Moss, M.C.; Major W. J. Weston; Capt. (temp. Major) P. S. Tomlinson; Capt. (temp. Major) R. E. Kelly, R.A.M.C. (T.F.); Capt. (temp. Lieut.-Col.) H. G. G. Mackenzie; Capt. (temp. Lieut.-Col.) G. T. Willan; Capt. (temp. Major) T. H. Peyton; Capt. R. E. Bickerton; Capt. C. W. Greene; Capt. R. M. Vick; Capt. T. Carnwath; Capt. W. R. Galwey; Capt. C. T. Edmunds; Capt. W. E. C. Lunn; Capt. O. R. McEwen; Capt. E. M. Middleton; Capt. N. V. Lothian; Capt. A. A. Atkinson (Spec. Res.); Capt. F. Crosbie (Spec. Res.); Temp. Capt. T. E. Parker; Temp. Capt. J. F. Bourke; Temp. Capt. D. Bell; Temp. Capt. K. G. Fraser; Temp. Capt. W. A. L. H. Henderson; Temp. Capt. H. P. Hamilton; Temp. Capt. G. B. Burwell; Temp. Capt. R. S. Dewar; Temp. Capt. R. A. Mansell; Temp. Lieut. J. V. Grant; Temp. Lieut. C. S. Dodson; and Temp. Lieut. H. F. Brice-Smith.

Canadian Army Medical Corps.—Col. J. A. Roberts; Lieut.-Col. W. B. Hendry; Lieut.-Col. E. C. Hart; Major C. H. Morris; and Capt. W. A. Clarke.

New Zealand Medical Corps.—Lieut.-Col. D. J. McGavin.

Indian Army.—Capt. F. F. S. Smith, I.M.S.; and Asst.-Surg. H. A. H. de Silva, I.M.S.

INSURANCE BENEFITS FOR DISABLED SOLDIERS.

In Circular A. S. 183 the Insurance Commissioners for England, Scotland, Ireland, and Wales make recommendations with regard to persons who have become permanently incapable of following their ordinary occupations, with particular reference to soldiers discharged with pensions, their view being that a man, although he cannot follow his usual occupation, may yet be fitted for some other kind of work. Attention is called to the conditions arising where there is partial recovery and to the desirability of considering the member's state of health when the claim for benefit is made, taking into account the possibility of there being work reasonably open to him for which he is fit, or could have fitted himself. A paragraph may be noted by medical practitioners which reminds societies that "a medical certificate of incapacity, whilst necessarily entitled to great weight in considering a claim for benefit, is not conclusive; and this fact becomes of special importance wherever it appears probable that, in giving a certificate that a partially disabled man is incapable of work, a doctor has had in mind no more than the inability of the man to resume the employment by which he gained his livelihood before his period of military service." It may be pointed out that it is not necessary that "what the doctor has had in his mind" when giving a certificate should be a question of "probability" only. Forms of certificate should be drafted which would make quite clear to the medical man the points as to which he is asked to certify. His opinion then, if not conclusive, would at any rate not be left to be interpreted conjecturally. Whatever part, however, the approved societies may be called upon to bear in the pensioning of our wounded soldiers and sailors for their war injuries, it is likely that generous treatment, as distinct from strict penny for penny compensation for loss of wage-earning capacity, will be expected by them, and insisted upon by their countrymen.

THE BRITISH RED CROSS SOCIETY.—Messrs. Christie will hold a sale for the benefit of the Red Cross at the end of March. Collectors and donors are asked to aim at making the sale a greater success if possible than that held last year, which realised more than £100,000. The Red Cross Gift House, Pall Mall, will be closed for the purposes of sale on Dec. 16th, but will be open for the reception of articles for the forthcoming sale.—The Joint War Committee of the British Red Cross Society and the Order of St. John of Jerusalem have offered to the Queen of Italy as a Christmas gift £10,000 worth of medical stores for the Italian wounded.—A Red Cross Fair will be held from Feb. 15th to 17th inclusive by the Committee of the County of London Branch of the British Red Cross Society at the Central Hall, Westminster. Offers of help should be addressed to the secretary, 57, Charing Cross, Trafalgar-square, W.C.

THE WAR EMERGENCY AND PANEL PRACTITIONERS.—The London Panel Committee have decided to keep a register of practitioners who have time at their disposal which they would be prepared to devote to looking

after the practice of members of the panel absent on war service. Anyone willing to render such assistance will be asked to furnish particulars as to the amount of time each day during which he would be able to do so. He is also invited to state whether he would be able to undertake work in a district other than that in which he resides. The secretary of the Panel Committee has frequently been applied to for information on this subject by practitioners who have been given commissions in the Royal Army Medical Corps, and it is hoped that members of the medical profession in London may still be available who can devote a fair amount of time to thus assisting their colleagues.

NEW MILITARY ORTHOPÆDIC CENTRES.—At the Cardiff Mental Hospital, now used as a general military hospital—the Welsh Metropolitan War Hospital, Commandant Lieutenant-Colonel E. W. Goodall—300 beds are to be given up to orthopædic cases. This arrangement has been made by the War Office at the instance of Lieutenant-Colonel Robert Jones. Fifty further beds at the hospital will be set aside for the preparation of stumps in order later to fit the wounded soldiers with artificial limbs. This will be done at the Prince of Wales's Hospital, Cardiff, under Lieutenant-Colonel Lynn Thomas, consulting surgeon to the Western Command.

A hospital for limbless soldiers is about to be opened at the new buildings erected in connexion with the Ulster Volunteer Hospital in the grounds of Belfast University. Colonel Robert Jones (who is chief organiser of such institutions under the War Office) has nominated Mr. A. B. Mitchell, F.R.C.S. Irel., surgeon to the Royal Victoria Hospital, Belfast, to take charge of this new organisation. He will hold the temporary rank of Lieutenant-Colonel, and will be responsible to the War Office through Colonel Robert Jones.

THE NEED FOR TROPICAL SANITATION.—In an article on the need for an organised application of tropical hygiene to our armies in the East, published in the current issue of the *Journal of Tropical Medicine and Hygiene*, Professor W. J. Simpson recalls Lord Derby's statement that during three spring months of this year the admissions to hospital in the Mesopotamian Army of British troops alone averaged nearly 2750, and the deaths over 100 weekly, and attributes this grievous wastage to lack of forethought and of any conception of the diseases which were likely to arise among troops campaigning in tropical heat. He suggests the creation at the War Office of a Board of Tropical Sanitation, composed of men with practical experience whose business it will be to maintain the health of the armies in the Eastern area, and the appointment of an inspector-general of sanitation for each army corps as consultative officer.

SCOTTISH WOMEN'S HOSPITALS.—At a meeting of the British Women's Hospital Committee, held at the Palace Theatre on Nov. 12th in aid of the funds of the London Units of the Scottish Women's Hospitals, Sir J. Forbes Robertson, who presided, said that in less than a year the Committee had raised £150,000 for the Star and Garter Home. The Committee now wished to raise funds for the Scottish Women's Hospitals. Contributions amounting to £1000 were announced, the moving and humorous speeches of Mrs. Compton, Mr. Pett Ridge, Lady Frances Balfour, Lady Robertson, and others conducing to this fine result.

THE WORK OF THE Y.M.C.A.—The secretary of this association, who has just returned from inspecting the work of the association at the front, states that there are now in one area 20 or 30 huts in dug-outs right up to the advance bases. The interests of officers as well as men are looked after, and in one area a large club has been established. The educational work includes lectures for both officers and men. More huts are urgently needed. It is interesting to note that the Y.M.C.A. War Fund has now reached £1,000,000. Promises of £5000 towards the erection of huts have been made by the milling trade, and it is anticipated that £10,000 will be raised at the Corn Exchange and a similar sum at the Baltic Exchange.

The Government have taken over the Portman Rooms, Baker-street, in order to relieve the pressure at the military hospital for officers at the Great Central Hotel.

The President of the French Republic has conferred the Croix de Guerre upon Temporary Captain G. F. P. Heathcote, R.A.M.C.

Correspondence.

"Audi alteram partem."

THE DIAGNOSTIC VALUE OF AGGLUTININ DETERMINATIONS IN INOCULATED INDIVIDUALS.

To the Editor of THE LANCET.

SIR,—Captain E. W. Ainley Walker's article in THE LANCET of Nov. 25th, illustrating the diagnostic value of agglutinin determinations in inoculated individuals, raises several interesting points, not the least important of which is the attitude which certain laboratory workers appear to adopt towards clinical medicine. This attitude is admirably illustrated by Captain Ainley Walker in the following words:—

Now, it is obvious that under present conditions no one would willingly or consciously assume the grave responsibility entailed in failure to detect cases of typhoid or paratyphoid fever which are capable of being readily detected. Yet this is what must necessarily occur, to the gross prejudice of general hygiene and efficiency, if only those cases of "enteric fever" are detected which yield a positive result by culture methods. On the other hand, the agglutination test, when suitably carried out and appropriately repeated, can be made to yield a uniformly accurate diagnosis in cases examined during active infection.

It is clear from the above statement that Captain Ainley Walker ignores *clinical observation* as a means of detecting typhoid and paratyphoid fevers, while his claim that agglutination tests alone invariably furnish an absolutely infallible diagnosis is much too extravagant. This attitude, if generally adopted, would be equally prejudicial to general hygiene and efficiency. The basis of all efficient hygiene is careful clinical medicine, which is also the foundation on which all laboratory efforts towards more accurate and complete diagnosis must rest. If a case of pyrexia is suspected clinically to be enterica (and every case of pyrexia is a possible enteric until shown to be something else), blood culture should be performed at once. If the blood culture is "positive" the diagnosis must be regarded as *absolute*. At the same time, whatever the result of the blood culture, agglutination tests by a strictly quantitative method should be performed and repeated at suitable intervals throughout the disease. The object of this procedure in a case in which an absolute diagnosis by blood culture has been obtained is not to diagnose the case—that has already been accomplished beyond dispute—but to furnish *agglutination results controlled by blood culture*. The data so obtained are essential as a guide to the interpretation of agglutination results in other cases in which blood culture has failed to give a diagnosis, but—and this is the point which I wish most strongly to urge—the *diagnosis of a case in which blood culture is negative should not as a rule rest on the interpretation of the agglutination results alone*, on the general principle that it is not good practice to diagnose any disease on one sign or symptom. On that principle the agglutination test, even "when suitably carried out and appropriately repeated," as Captain Ainley Walker would like, is not *per se* a method of diagnosis of disease. It is a method by which extremely important information, positive or negative from the point of view of diagnosis, may be obtained in the majority of cases, but in arriving at that diagnosis the results obtained by agglutination should be interpreted in conjunction with the other clinical signs and symptoms of the disease. The extent to which Captain Ainley Walker's mind is obsessed with agglutination as a method of diagnosis *per se* is well illustrated by Case 4 in his article. The clinical facts which he supplies regarding this case are: "Onset with shivering and headache. Three smart rises of temperature to 105°, 103.5°, and 102.5° F. respectively, on the first, third, and fifth day of the illness simulating tertian ague. No malarial parasites in the blood. From the fifth day onwards temperature sub-normal and rising to normal." This clinical picture is incomplete, but it is hardly necessary to point out to anyone with clinical experience of enterica and malaria that it is, so far as it goes, a typical clinical picture of a mild infection of benign tertian malaria.

Captain Walker says there were no "malarial parasites in the blood," by which, I presume, he means that the blood was examined for malarial parasites and none were found. That, of course, does not necessarily mean that there were "no malarial parasites in the blood," and, having regard to the perfect tertian periodicity of the pyrexia, the conclusion is almost irresistible that there were malarial parasites in the blood which escaped detection. Yet, in spite of the clinical facts which pointed strongly to benign tertian malaria, Captain Ainley Walker diagnoses the case as one of "typhoid fever in a T.-inoculated individual" on one sign—namely, a fluctuation of 350 per cent. in the T.-agglutinin content of the blood with maximum at or near the seventeenth day of disease. With reference to the diagnosis of this case I should like to ask Captain Walker the following questions:—

1. Has he ever seen an uncomplicated case of typhoid fever produce perfect tertian periodicity of temperature?

2. Has he ever seen a case of typhoid fever (whether in an inoculated or uninoculated individual) proved by blood culture, in which the pyrexia lasted only five days?

3. How many cases of benign tertian malaria, proved by the discovery of the parasite in the blood, has he seen in T.-inoculated individuals in which careful estimations of the T.-inoculation agglutinin have been repeated as in Case 4, to show that a fluctuation of 350 per cent. in the T.-inoculation agglutinin cannot possibly be due to benign tertian malaria?

This case, it should be noted, came from the Mediterranean area, an area where malaria was common and commonly mistaken for enterica. In diagnosing such cases as typhoid fever on agglutination alone Captain Walker tends to bring discredit on a method which, when kept in its proper place, is capable of furnishing most useful information in the elucidation of many puzzling pyrexias.

The second point of interest raised by Captain Walker's article is the use of the graphic method of representing the fluctuations in the agglutinin content of the blood which takes place in inoculated individuals during active enterica. His diagrams would have appealed more strongly to me had the points found by examination been joined by straight lines. The diagrams might then have lost some of their apparent mathematical accuracy and symmetry, but that loss would, in my opinion, have been more than counterbalanced by the knowledge that they represented series of ascertained facts only—and not, as at present, series of ascertained facts with interpolated figments of imagination. This interpolation is well seen by studying the placing of his maxima. In a previous communication¹ by Major G. Dreyer and Captain Walker, the following clear and emphatic statement is made:—

4. In following out the titration of the patient's serum on several successive occasions it will frequently be found that the maximum has fallen between two dates of observation. And two successive observations at about the same level do not mean that the curve is stationary at this point but merely that the maximum has occurred between there (? misprint). Similarly if the two highest observations are at different levels, it does not follow that the highest titre observed represents the maximum of the agglutination curve, but it does follow that the maximum has occurred between these points.

The last sentence of this paragraph, which I have italicised, is, of course, not strictly correct. The maximum of any curve lies either between the highest recorded reading and the one immediately preceding it, or between the highest recorded reading and the one immediately following it—that is to say, it takes three readings on a curve to determine always with certainty the limits within which its maximum lies. Captain Walker departs from his own rule regarding the position of the maximum in Cases 4, 5, 8, 11, and in Case 6 actually indicates a maximum in the T. curve between his first and second observations, although all the T. estimations from the first show a progressive slow fall in the T. agglutinin! I would be greatly obliged if Captain Walker would explain why Case 10 is "clearly a case of B infection."

In conclusion, I would assure Captain Walker that I sing him no "hymn of hate."² I do not believe that personal emotions such as love or hate can possibly enter into discussions on purely scientific matters. I would further assure

him that my criticism is not in any way directed against Dreyer's technique, for I believe that the Oxford School of Pathology has, by working up this method to its present state of accuracy, performed a great service to medicine in general, and to military medicine in particular. This service has been duly recognised by the Medical Research Committee in placing the materials necessary for following out the method at the disposal of all workers in military hospitals. My criticism is directed in all good faith, firstly, against what I believe to be a total lack of balance in Captain Walker's mind regarding the relative value of accurately ascertained clinical facts and accurately determined agglutinin estimations—an attitude which leads him to unnecessarily grave apprehensions regarding general hygiene and efficiency, and which is bound to lead in certain cases to errors in diagnosis which he appears anxious to avoid. My criticism is directed, secondly, against what I believe to be a too free play of the imagination in his use of the graphic method of recording observed serological data.

I am, Sir, yours faithfully,

R. P. GARROW,
Captain, R.A.M.C.

London, Dec. 8th, 1916.

EPSOM COLLEGE.

To the Editor of THE LANCET.

SIR,—In consequence of the loss of many annual subscriptions as a result of the war, and in part due to the fact that so many medical men are engaged away from their homes on military duties, it becomes necessary to obtain fresh annual subscribers if the good work of the Royal Medical Foundation attached to Epsom College is to be maintained.

Your readers will see from the advertisement which appears on p. 7 of THE LANCET of Dec. 9th that a sum of £4500 has to be collected each year in order to provide the same number of pensions and Foundation scholarships which hitherto have been given annually out of the Foundation Fund of the College. To reduce the number of beneficiaries would be deplorable from every point of view, more especially as the present excessively high war-prices are greatly increasing the hardships endured by the very indigent persons who are candidates for the benefactions given by the College.

Much help might be rendered if those interested in the welfare of the College would urge their friends to become subscribers or donors, to whom in return certain voting privileges are afforded. Donors of 10 guineas and collectors of 20 guineas are life governors, and subscribers of 1 guinea annually are governors during the continuance of their subscriptions. Such life governors and governors have ten votes each, which may be given for Foundation scholars alone, or for pensioners alone, or be divided between the two classes. Smaller contributions are gladly received.

In conclusion, I desire to make a very earnest, urgent appeal to the profession not to allow other new professional philanthropic movements, however excellent in themselves, to prejudice the claims and diminish the possibilities for doing good of Epsom College Foundation Fund.

I am, Sir, yours faithfully,

HENRY MORRIS,
8, Cavendish-square, W., Dec. 9th, 1916. Honorary Treasurer.

THE MOBILISATION OF THE MEDICAL PROFESSION.

To the Editor of THE LANCET.

SIR,—In the article on this subject appearing in your issue of Dec. 9th you say—

We believe that the general opinion of the medical profession, judging from the correspondence that comes to us, is in favour of medical mobilisation.

What you mean by "medical mobilisation" is not quite clear, but as your words have been eagerly seized upon by the Medical Correspondent of the Times, who, in my opinion, consistently misrepresents the profession, I cannot help fearing the worst. If this "mobilisation" were part and parcel of a general mobilisation of the civil population, as has been recently seen in Germany, I do not

¹ The Diagnosis of the Enteric Fevers in Inoculated Individuals by the Agglutinin Reaction, THE LANCET, Sept. 2nd, 1916.

² Vide Dr. P. N. Panton, THE LANCET, Oct. 23th, 1916.

doubt that all medical practitioners would be quite willing to take their share in it. But if, on the other hand, the "mobilisation" be a system of compulsion for war purposes of the medical profession *only*, I must express my surprise at the tenor of the correspondence you have received. I have always been a careful reader of THE LANCET, but have hitherto seen nothing warranting such a conclusion. However, if such is the case, it is all the more necessary that those who have some regard for the liberties of the profession should have a hearing in your columns. I would therefore ask you to record my most emphatic protest against any mobilisation of the latter kind. That a common burden should be borne equally by all is one of the fundamental principles of the British Constitution; but that a section of the community should be compelled to undertake duties not shared by the rest is altogether foreign to it. To tyrannise over the medical profession in such a manner seems to me almost inconceivable. It has already done voluntarily far more than its share in the present crisis, and, like a "willing horse," is to be overloaded.

For more than 30 years I have consistently endeavoured in medical politics to uphold the dignity and honour of the profession. From my position on many medical bodies I may fairly claim to be a representative practitioner, and to know something of the views of my constituents, and it fairly takes my breath away to read in the pages of THE LANCET such a misrepresentation of our views—that is, if the mobilisation signified is one of the latter description. Such tyranny, I believe, would, and should, meet with the strongest opposition. When the civil population generally is shifted about the country compulsorily the medical profession may be expected to fall into line. That a time may come when this is necessary is quite possible. I am well aware that during a great war we can none of us expect to enjoy the same liberties as in times of peace, but in order that the resources of the country may be utilised to the fullest extent there must be equity all round; there must be no special class legislation. The fruits of such must inevitably be disunion and dissatisfaction.—I am, Sir, yours faithfully,

Hackney-road, N.E., Dec. 9th, 1916. MAJOR GREENWOOD.

* * Dr. Major Greenwood indicates exactly where the main difficulty arises. Should the medical profession await a general movement for the utilisation of man-power for the war, or should we take steps to organise ourselves with that object, thus recognising that our position is not that of other citizens?—ED. L.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

ENGINEER, SORAB K., M.R.C.P.E., has been appointed Honorary Physician to Sir J. J. Hospital, Bombay.
MACKARELL, W. W., M.D. Liverp., D.P.H., D.T.M., Pathologist to Leicester Royal Infirmary.
SHAW, EDITH A., M.B., B.S. Lond., M.R.C.S. Eng., L.R.C.P. Lond., House Physician to Victoria Hospital for Children, Tite-street, Chelsea.

Certifying Surgeons under the Factory and Workshop Acts: CREWSEY, C. J., L.R.C.P. Lond., M.R.C.S. (Ringwood, Hants); and NICHOLL, R. O., L.R.C.P., L.R.C.S. Irel. (Lytham, Lancs).

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index). When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BIRKENHEAD EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary £350 per annum.
BOURNEMOUTH, ROYAL VICTORIA AND WEST HANTS HOSPITAL.—House Surgeon, unmarried, for six months. Salary £200 per annum, with board, &c.
BRISTOL ROYAL INFIRMARY.—House Physician. Salary at rate of £120 per annum, with board, &c.
BURNLEY, VICTORIA HOSPITAL.—House Surgeon. Salary £160 per annum, with board, &c.
CHILDREN'S INFIRMARY, Cleveland-street, London, W.—Female Assistant Medical Officer. Salary £250 per annum, with residential allowances.

CLINICAL RESEARCH ASSOCIATION, Watergate House, York-buildings, Adelphi, W.C.—Assistant Director of Laboratories. Salary not less than £250 per annum.

CROYDON UNION INFIRMARY.—Resident Assistant Medical Superintendent of Union Infirmary and Assistant Medical Officer of Union House and Children's Homes. Salary £250 per annum, with residential allowances.

GENERAL LYING-IN HOSPITAL, York-road, Lambeth.—Resident Medical Officer for three months. Salary £100 per annum, with board, &c.

LANCASTER COUNTY ASYLUM.—Female Assistant Medical Officer. Salary £250 per annum, with board, &c.

LIVERPOOL, ROYAL SOUTHERN HOSPITAL.—Three House Surgeons (Male or Female) for six months.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Assistant Resident Medical Officer. Salary £120 per annum, with board, &c. Also Casualty Officer (non-resident). Salary £120 per annum.

MANCHESTER, ANCOATS HOSPITAL.—Two unqualified Residents. Salary £50 per annum, with board, &c.

MANCHESTER, HULME DISPENSARY, Dale-street, Stretford-road.—House Surgeon. Salary £250 per annum, with apartments, &c.

NORTHAMPTON COUNTY.—Temporary Tuberculosis Officer. Salary at rate of £450 per annum.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—House Physician. Salary £160 per annum, with board, &c.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Physician. Salary £200 per annum, with board, &c.

ROTTERHAM HOSPITAL.—Junior House Surgeon. Salary £150 per annum, with board, &c.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Second Clinical Assistant in Gynaecological Department. Also Female Pathologist to Venereal Diseases Department (part-time). Salary at rate of £200 per annum. Also Two Senior Assistants in Venereal Out-patient Department. Salary at rate of 156 guineas per annum.

ROYAL NATIONAL ORTHOPEDIC HOSPITAL, 234, Great Portland-street, W.—Resident Surgical Officer.

ST. PANCRA'S DISPENSARY, 39, Oakley-square, W.—Resident Medical Officer. Salary £150 per annum, with residence, &c.

SAMARITAN FREE HOSPITAL FOR WOMEN, Marylebone-road, N.W.—Registrar. Salary at rate of £50 per annum.

SHEFFIELD UNION HOSPITAL, Firvale.—Two Female Resident Assistant Medical Officers. Salary £250 per annum, with rations, &c.

SHERWSBURY, SALOP COUNTY COUNCIL.—Temporary Tuberculosis Medical Officer. Salary at rate of £500 per annum.

SOUTH LONDON HOSPITAL FOR WOMEN, South Side, Clapham Common, S.W.—Female Medical Officer in Charge of Gynaecological Clinic. Also Female Medical Officer in Charge of Skin Clinic. Also Pathologist, part time only.

SURREY EDUCATION COMMITTEE.—Temporary School Dentist. Salary £300 per annum.

VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST ON THE SEPARATE PRINCIPLE.—Assistant Resident Medical Officer.

WESTMORLAND SANATORIUM, Meathop, Grange-over-Sands.—Second Assistant Medical Officer. Salary £200 to £250 per annum, with board, &c.

WEST RIDING OF YORKSHIRE.—Assistant Medical Officer at the Cardigan Sanatorium, Carr Gate, near Wakefield, and the Middleton-in-Wharfedale Sanatorium, near Ilkley. Salary £400 per annum.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Harrogate, Yorks.

Births, Marriages, and Deaths.

BIRTHS.

BENJAMFIELD.—On Dec. 1st, at New Cavendish-street, W., the wife of J. Duoley Benjafield, Captain, R.A.M.C.—a son.
FRENCH.—On Dec. 7th, at Wimpole-street, Cavendish-square, W., to Dr. and Mrs. Herbert French—a daughter.
HUTCHINSON.—On Oct. 28th, at Malabar Hill, Bombay, the wife of Major L. T. Rose Hutchinson, Indian Medical Service, of a son.
OGLIVY.—On Dec. 9th, at Long-grove House, Epsom, the wife of David Oglivy, M.D., of a daughter.

MARRIAGES.

GLENNY—ELLIOTT.—On Dec. 9th, at St. John's Church, Clifton, Elliott Thornton Glenny, M.B., B.S. Lond., Captain, R.A.M.C., to Rachel Winifred, eldest daughter of Christopher Elliott, M.D., of Clifton, Bristol.
MACALPINE—JONES.—On Dec. 7th, at All Souls' Church, Langham-place, London, Captain James B. Macalpine, F.R.C.S., to Doris, younger daughter of Mr. and Mrs. Herbert Jones, of Oswestry.

DEATHS.

BROOKHOUSE.—On Dec. 3rd, Herbert Orpe Brookhouse, M.D., aged 35 years.
COMBER.—On Dec. 5th, at the Manor House, Bourton-on-the-Water, Glos., Francis Richard Sandford Corser, M.B., aged 56.
EVANS.—On Dec. 10th, at Leith Mansions, Malda-vale, Murray D. Evans, M.B.C.S., L.R.C.P., aged 25.
MCILWEE.—On Dec. 9th, at the Royal Naval Hospital Haslar, D:puty-Surgeon-General John McIlwee, R.N. (ret'd.), aged 55.
RENSHAW.—On Dec. 6th, at his residence, Beech Hurst, Ashton-on-Mersey, Charles J. Renshaw, M.D., aged 75.
WINTLE.—On Dec. 11th, at Kingsdown, Strawberry Hill, Twickenham, Henry Wintle, M.B.C.S., M.B., aged 72.
WYER.—On Dec. 11th, at Epperstone House, Leamington Spa, Otto Francis Wyer, M.D., J.F., aged 79 years.

N.B.—A fee of 6s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE BATTLE OF THE WIGS.

A CORRESPONDENT has sent us a well-preserved copy of "The Battle of the Wigs," a medical *jeu d'esprit* to which allusion is often made, though the original is rarely seen. The verses were published as an additional canto to the well-known poem of Dr. Garth, "The Dispensary," and the occasion of publication was certain disputes between the Fellows and Licentiates of the Royal College of Physicians of London. These disputes were dealt with by Dr. Bonnell Thornton, the author of the squib, in a very broad manner, no personalities being indulged in, and no prominent doctor being specially designed for ridicule. It seems that about 1768 the Fellows, in order to mark the respective rights of themselves and the Licentiates holding the lower diplomas, decided that the management of the College must remain with the heads of the hierarchy; and, according to Dr. Thornton's muse, who is unsupported by cold fact, the Fellows, expecting trouble with the more numerous Licentiates, garrisoned their College building with butchers to repel an organised attack of the Licentiates, who had employed blacksmiths to break open the College gates in Warwick-lane:—

Within the gates close-bolted, lock'd, and iron'd,
Of neighbouring BUTCHERS stands an awful guard;
Each with an azure apron strung before,
And snow-white sleeves, as yet unstain'd with gore:
The foe the whetting-iron bears dismay'd,
Grating harsh musick from the sharpening blade.

From Newgate Market came the bloody bands,
With marrow-bones and cleavers in their hands,
Fram'd to split skulls, and deal destructive knocks,
To fell a doctor, or to fell an ox;
Fit instruments to quash a foe, then ring
A peal of triumph,—*Ding dong, ding dong, ding.*

No wonder, butchers should physicians aid:
The same their practice, nor unlike their trade:
And what alliance more exactly suits?
Man-killers leagu'd with those who slaughter brutes.

Nor yet on these alone the Dons rely,
But they prepare a mask'd artillery.
A water engine, charg'd with bearish gore,
Stands ready on the foe its filth to pour.
And what than this can cost a greater dread,
Design'd to change the sable coat to red?

The poem ends with the intervention of Pluto, who appears in full pantomimic guise, black-coated, red-legged, and plumed, and insists on the suspension of civil war between medical men:—

"Though Doctors differ:—for the human tripe
Though some the purge prefer, and some the pipe;
Or in th' Intestines raise the sharp commotion,
Some with a pill, and others with a potion;
Though, to apply the flayer of the skin,
Some hold a virtue, others ho'd a sin;
In *Antimony* some their trust repose,
And some in *Mercury*,—to save a nose;
In this one point ye never disagree,—
Ye're all unanimous—about the fee.

"Come then, my friends, (for now methinks I spy
A mild complacency in ev'ry eye,
Think on the meed, that tickles sweet your hand,
The glittering meed, no Doctor can withstand."

Pluto then disappeared in a triumphal car shaped like a hearse and drawn by six coal-black steeds, through Warwick-lane, down Ludgate-hill, to the Fleet Ditch, which is pictured as being in direct connexion with Acheron. Into this polluted stream the god disappears, with a strong perfume of asafoetida. Thereafter, presumably, peace prevails, for the last couplet of the poem is—

Their feuds forgot, the Doctors, with amaze
And reverent awe, on the procession gaze.

The special knowledge of classics and the general knowledge of contemporary literature displayed by Dr. Thornton in his poem of 260 lines is really remarkable.

HEALTH OF SEYCHELLES.

ACCORDING to the annual report of the Governor of Seychelles, Lieutenant-Colonel C. R. M. O'Brien, C.M.G., the estimated population of the colony on Dec. 31st, 1915, was 24,435 (12,435 males and 12,000 females), an increase, as compared with the previous year, of 294. The birth-rate for the year was 27.78 per 1000 and the death-rate 16.33 per 1000. The number of in-patients treated in the Victoria Hospital in 1915 was 548, and 1989 persons received attention at the Government dispensaries. During the months of July and August there was an epidemic of mild dengue fever, but the cases were far from being typical. In the last two months of the year a considerable number of cases of an extremely

acute and severe form of cellulitis were met with; the infection generally occurred in the legs. The treatment adopted was free incision of the infected areas, followed by baths and constant application of hypertonic saline solution, as recommended by Colonel Sir Almroth Wright; this proved most successful, the infected areas healing with surprising rapidity. An epidemic of jaundice broke out towards the end of the year, but was quickly subdued. The Chief Medical Officer reports no diminution in the number of cases of venereal disease or of ankylostomiasis. The hookworm expert who is being sent by the International Health Commission to advise as to the best means of combating the spread of the last-named disease is not expected to arrive in Seychelles before the end of 1916. In anticipation of his visit a considerable number of persons were examined in order to ascertain the percentage of population infected with intestinal parasites. The results give the island of La Digue a percentage of 70, and the rest of the colony 41, of ankylostomiasis infection. The number of patients in the Lisper Asylum on Dec. 31st, 1915, was 7. The rainfall for the year was 114.88 inches (5.81 inches more than in 1914) and the mean temperature was 80.4° F.

THE LATE EMPEROR OF AUSTRIA AS A PATRON OF MEDICINE.

At the Vienna Medical Society on Nov. 24th the President, Dr. Sigm. Exner, summarised Emperor Francis Joseph's services to science and the medical world in particular. The reform of secondary education was, he said, the outcome of the *Thun* curriculum, dating from the early part of the Emperor's long reign, which freed the universities from the yoke of scholasticism. The motto "Science and its teaching is free," was due to him as well as its practical application. The new buildings of the General Hospital in Vienna were his work. During his reign the Vienna Medical School attained the high-water mark of its fame under Rokitsanski, Skoda, and Hyrtl at first, and later Arit, Schuh, Dittel, Hebra, Oppolzer, and Türk, while the Emperor did not hesitate to nominate such foreigners as Brücke, Billroth, Nothnagel, and Strümpell to add to its dignity.

IRISH NURSES AND THE COLLEGE OF NURSING, LIMITED.

To the Editor of THE LANCET.

SIR,—I am at a loss to understand how your Irish correspondent has ascertained "the fact that membership of the College is open not merely to trained nurses but to those practising any branch of nursing, such as mental nursing or massage, and that the latter are to have equal voice with fully trained members in the government of the College."

On reference to the Memorandum and Articles of Association it will be seen that membership of the College is strictly limited to nurses who possess a certificate of proficiency in general nursing (medical and surgical), and it is the members who govern the College. Obviously, however, a college which aims at becoming the headquarters of the nursing profession in all its branches must have power to grant certificates in any special branches, but such certificates do not carry membership, nor do they entitle the holder to a place on the Register.

I am, Sir, yours faithfully,

M. S. RUNDLE,
Secretary.

Vere-street, W., Dec. 11th, 1916.

FIRE PREVENTION IN HOSPITALS.

THE British Fire Prevention Committee call attention to a series of warning posters which they issue gratuitously. These are 8 inches wide, printed in red, and two of them deal specially with hospitals: No. 10 with Red Cross hospitals, &c., and No. 11 with private hospitals, convalescent homes, &c. These may be obtained in suitable number by the medical officer, matron, or secretary of the hospital upon written application to the Registrar at 8, Waterloo-place, London, S.W.—A useful little manual of 60 pages on "Fire Prevention and Fire Protection" has also just been issued by Dr. Otto R. Eichel, an official in the New York State Department of Health (London: Chapman and Hall, 1916. Price 4s. 6d.), and contains the measures adopted by the National Fire Protection Association. It is unfortunate that the little book is so expensive.

THE VALUE OF CHOCOLATE AND COCOA.

WE have before now pointed out that some silly things have been said about chocolate which have attempted with an air of authority to discount its value as an article of food. This might very well be repeated to-day, as there is some confusion of thought between the value of sugar and chocolate as subjects for discussion. A chocolate ration in the Austrian Army was thought to be very valuable, and even sugar in a pail of water has often been given as a reviving draught to weary horses, not to mention men. In THE LANCET of 1905 (Jan. 7th and Feb. 14th) we published the results of some special investigations on "Cocoa Chemically and

Physiologically Considered," which are again of interest in these days when food-values are being reconsidered. The great cocoa and chocolate products must be considered by the public in a fair spirit, as they are of real value, although some of them may cause criticism by being too much adorned and too luxuriously flavoured. A loaf of bread or a steak tied up with ribbons and wrapped in fancy paper is still real food. The cocoa, chocolate, and chocolate biscuits which Messrs. Cadbury Brothers have submitted to us may properly be considered as of special importance to workers during these strenuous times. It is obvious that no care or expense has been spared to render them useful and palatable, as well as pure.

H. A.—The author's dramatic way of illustrating the difference in subsequent events, when town and country are compared, is too pictorial for a medical treatise and may be misleading through absence of precision. Of course, a large proportion of these cases are spontaneously set right by growth.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
Monday, Dec. 18th.

OCCASIONAL LECTURE (the President of the Society in the chair):
at 5 P.M.

Sir Almroth Wright will deliver a lecture in the Robert Barnes Hall on "Gas Gangrene."

N.B.—Members of all Sections are invited.

Tuesday, Dec. 19th.

GENERAL MEETING OF FELLOWS: at 6 P.M.

Ballot for Election to the Fellowship.

(Names have already been circulated.)

MEETINGS OF SECTIONS.

Wednesday, Dec. 20th.

HISTORY OF MEDICINE (Hon. Secretaries—J. D. Rolleston, Charles Singer): at 5 P.M.

Exhibit of Portraits, Books, &c. (at 4.30 P.M.).

Paper:

Dr. J. D. Roberts: The Medical Interest of Casanova's "Mémoires"

Thursday, Dec. 21st.

DERMATOLOGY (Hon. Secretaries—J. E. R. McDonagh, Henry MacCormac): at 5 P.M.
(cases at 4.30 P.M.).

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

WEDNESDAY.—4 P.M., Paper:—Mr. A. C. Benson, C.V.O.: Classical and Scientific Education.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover-square, W.

WEDNESDAY.—7 P.M., Mr. A. Bacot: Note on the Relation between the Hatching and Development of the Larvæ of the Yellow Fever Mosquito, *Stegomyia Fasciata*, and the presence of Bacteria and Yeasts.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynaecological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics.—10.30 A.M., Surgical Out-patients (Mr. H. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipple); Gynaecological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whitting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipple); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynaecological Operations (Dr. A. H. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whitting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. H. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

EDITORIAL NOTICES.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C.

MANAGER'S NOTICES.

ALTERATION IN THE PRICE OF "THE LANCET."

INCREASED war expenses and cost of production necessitate an increase of the price of THE LANCET. Commencing with the first issue in the New Year, the price will be 8d. instead of 6d. The rates of subscription will remain as revised in October.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

Subscribers abroad are particularly requested to note the rates of subscriptions given on page 4.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newspapers (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and not to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

NEWSPAPERS FOR NEUTRAL COUNTRIES.

Newspapers are not at present being sent forward to neutral European countries unless posted direct from the office of publishers or newspapers who have obtained permission from the War Office for this purpose. The Publisher of THE LANCET has obtained the required permission, and he will forward copies direct from the Office to any neutral country on receipt of instructions.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Seward's Instruments.)

THE LANCET Office, Dec. 13th, 1916.

| Date. | Rain-fall. | Solar Radio in Vacuum. | Maxi-mum Temp. Shade. | Min. Tem. | Wet Bulb. | Dry Bulb. | Remarks. |
|--------|------------|------------------------|-----------------------|-----------|-----------|-----------|----------|
| Dec. 7 | ... | 45 | 44 | 36 | 38 | 40 | Overcast |
| " 8 | 0.05 | 57 | 46 | 40 | 43 | 43 | Overcast |
| " 9 | 0.20 | 59 | 48 | 38 | 45 | 46 | Raining |
| " 10 | 0.14 | 55 | 45 | 38 | 37 | 33 | Cloudy |
| " 11 | 0.01 | 46 | 43 | 38 | 37 | 38 | Raining |
| " 12 | 0.01 | 48 | 42 | 38 | 37 | 38 | Overcast |
| " 13 | ... | 42 | 40 | 38 | 37 | 38 | Overcast |

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

The following journals, magazines, &c., have been received:—*Annales de Médecine*, *Annaes Paulistas de Medicina e Cirurgia*, *Public Health*, *Revista Odontologica*, *Journal of Mental Science*, *American Journal of Public Health*, *St. Thomas's Hospital Gazette*, *Interstate Medical Journal*.

BOOKS, ETC., RECEIVED.

- ALLEN, GEORGE, AND UNWIN, London.**
Diary of a French Private, 1914-1915. By Gaston Riou. Translated by Eden and Cedar Paul. Price 5s. net.
Battles and Blivouacs: A French Soldier's Note-book. By Jacques Roujon. Translated by Fred Rothwell.
- BALE, JOHN, SONS, AND DANIELSSON, London.**
Extra-Ocular Pressure and Myopia. By I. B. Muirhead, M.D. Price 3s. 6d. net.
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Observations

ON

THE ANTISEPTIC TREATMENT OF WOUNDS.

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AND

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In approaching any surgical problem from the point of view of treatment there are, roughly, two methods of attack. There is, firstly, the experimental method whereby the pathological changes are reproduced, as accurately as possible, under artificial conditions. These changes are studied and the methods of controlling them are investigated. This method, if skilfully carried out, has the advantage of occupying a relatively short space of time and may be of enormous value in directing attention to new points of view. It, however, suffers from the great drawback that so little is even now known of the nature of pathological changes that the experiments, however carefully conceived, may not actually reproduce these changes, and their interpretation becomes to a certain extent a matter of opinion. By the second method actual cases which have been treated by different means are carefully collected and compared. If care is taken to eliminate certain fallacies this method will give much more definite results, but it is also to a certain extent unsatisfactory, in that a prolonged period of time is occupied in collecting a sufficient amount of material to be of value.

Both methods have the common fault that it is difficult for the observer to approach the problem free from bias and not to attempt, by his experiments or his figures, to prove a certain point rather than to settle an open question. That both methods are far from being perfect is seen by the present position of the treatment of wounds of war. In spite of the fact that the war has lasted for over two years and has provided a number of septic wounds such as has never before been met with, the methods of treatment are still multitudinous. In pre-martial times these methods fell roughly into two groups: the first, which attempted to aid the bodily processes of protection by the use of saline baths, fomentations, Bier's passive congestion, the use of vaccines, and the like; and the second, which attempted to kill or at least to retard the growth of the invading organisms by the use of antiseptics. The majority of modern surgeons had, however, to combat such mild forms of infection that the study of this subject had fallen into neglect, and both methods of treatment must be considered to have reached a stage which was far from approaching perfection.

Since the outbreak of war the extensive researches of Sir Almroth Wright¹ have done an enormous amount to perfect the first or physiological method, and by theoretical arguments he has done much to throw the use of disinfectants into disfavour. Direct evidence in favour of or against the use of disinfectants has not, however, been conclusive. It is a remarkable fact that in spite of the revolution caused by the work of Lister no list of cases, with the exception of a few reported by Sir Watson Cheyne³ (which throw but little light on the present discussion), has been reported to show the value or failure of Lister's methods as applied to the lesions of the present war. There has been much discussion, not entirely free from acrimony, on the use of antiseptics in general, and Gray² has even gone so far as to state that "it mattered not what kind or what strength of antiseptic, pure and simple, was used, the infection ran a fairly definite course of fairly definite duration, which varied merely according to the patient's power of resistance." He, however, brings forward no evidence in support of so sweeping a statement. Carrel,² on the other hand, repudiates the view that antiseptics are valueless, but admits that they have often been abused and ill-chosen. He advocates the use of a solution of sodium hypochlorite as prepared by Dakin.⁴

No. 4869.

Scope of Investigation.

In this communication we do not propose to approach the problem from the experimental side, nor to discuss the theory of the limitation of infection, nor how repair of a wound takes place, nor whether an antiseptic has penetrating power or simply coagulates the surface albumin, so that under this coagulum the organisms grow freely. In the first place, it appears to us that no one without an expert knowledge of physics and bacteriology, which we feel that we do not possess, is capable of entering into such a discussion; and, in the second place, the subject has been so fully entered into by Sir Almroth Wright,¹ and his views so strongly assailed by Taylor,¹² that no object would be gained by pursuing the subject further. It appears to us that a much more useful purpose will be served by simply reporting a series of cases where different methods of treatment have been carried out. It has already been mentioned that a long time must of necessity elapse before such a series of cases can be collected, and thus it is that we have only now felt that we have sufficient material at our command to warrant us in drawing any definite conclusions. Up to the present no such series of cases has been published. It is true that, on the one hand, Davy,⁶ Donaldson, Alment, and Wright,⁷ and Roberts and Statham¹⁰ have published series of cases showing some extremely satisfactory results from the use of salt dressings, but in no case is any note made as to what percentage of the total number of cases treated is formed by those reported, nor is any comparison made with the results of other forms of treatment. On the other hand, Dalton¹ and Fraser¹ report a series of cases showing equally satisfactory results when treated with hypochlorite solution or hypochlorous acid prepared in the manner advocated by Professor Lorrain Smith.¹¹ Bérard and Lumière¹ also strongly support the use of such solutions without quoting any cases. It will be seen that after the perusal of such accounts the issue is left as much in doubt as formerly.

It is probable that much of this difference of opinion is due to the fact that methods which may succeed when used with cases at the front, shortly after the wounds have been inflicted, may not be so successful when applied to wounds as seen at the London base hospitals, several days after their infliction. It has been our fortune to have had some experience of wounds at the front and a much larger experience of wounds in various London hospitals, and it will be seen from our tables that the treatment which we have employed has been brought into use at very variable times after the infliction of the wounds.

We may say that when the war broke out we held no very strong views in favour of any one method of treatment, and our first series is made up of the cases treated by one of us in the earlier stages of the war at several military hospitals by methods which appear to be fairly representative of those generally used in London. One of us (I. F.) had, however, been treating several septic cases at the beginning of the war with an antiseptic liquid which had given such good results that it was decided to try its effect in cases of military wounds. It appeared to us that its use was so successful that of late we have been using the liquid for the majority of our cases, and this opinion has been confirmed by observation of the results of other methods of treatment as seen in cases arriving from France and elsewhere. Our second series of cases is made up of those treated with this antiseptic.

It is manifestly impossible to report in detail the many hundreds of cases which have come for treatment, nor indeed is it desirable; for the greater number of them have relatively small wounds which will heal rapidly under practically any form of treatment, and the inclusion of these cases will only tend to confuse the results. On the other hand, if a selection be made simply of the more severe cases, there is great danger of choosing those wounds which would tend, perhaps unfairly, to support one or other line of treatment. We have decided, therefore, to take only the cases of compound fracture, and to include every example of this type of injury (other than fracture of the skull) which has been under our care, for it has been our experience that this group will include the greater number of the more severely septic cases. It is true that among them will occur several of less severe injury of bone in which the sepsis is slight, and that many cases of severe sepsis will be omitted, but this will apply probably in an equal degree to both groups, and hence the two tables should form a fair comparison. We have purposely omitted injuries of the skull,

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for in the majority of them the lesion of the brain is of paramount importance, and makes the reaction of the tissues to the treatment for the sepsis much more obscure.

Wherever possible we have recorded the method of treatment carried out before the case reached us, but it will be understood that the notes of such previous treatment have of necessity often been very sketchy, and at times it was necessary to supplement them by inquiries from the patient, so that we cannot vouchsafe for their accuracy; but we have thought it wise to include them so that we might, as far as possible, judge of the results of these methods of treatment as carried out by others.

Control Cases.

As our main object is to show the value of one special line of treatment we have grouped all the other cases, whether treated by physiological or antiseptic methods, together in our first table and have called them control cases, but in each case the treatment is described. It will be seen that the results as a whole cannot be considered good. They number in all 21, and of these 4 required amputation owing to failure to control the sepsis and 2 cases died from septic complications. Of the remainder 5—namely, Nos. 3, 4, 8, 10, and 19—were small wounds with only a slight infection which would almost certainly have done well with any kind of treatment. In several cases, it will be noticed, a considerable amount of swelling occurred in the surrounding tissues and the infection tended to spread, so that not uncommonly incisions had to be made to drain localised collections of pus. This generally took place in the first two or three weeks. If we analyse the treatment carried out before the cases were placed under our care we find that severe sepsis occurred with all methods, as is seen in the following table.

| Treatment. | Severe sepsis. | Slight sepsis. | Total. |
|-----------------------|----------------|----------------|--------|
| Fomentations... | 5 | 2 | 7 |
| Saline irrigation ... | 2 | — | 2 |
| " baths ... | 1 | — | 1 |
| " gauze ... | 2 | — | 2 |
| Salt packs ... | 1 | — | 1 |
| Dry gauze ... | 4 | 3 | 7 |
| Eusol... .. | 1 | — | 1 |

If, on the other hand, we analyse the results of the methods carried out by us we still find the general results unsatisfactory.

| Treatment. | Severe sepsis. | Slight sepsis. | Amputations. | Deaths. | Total. |
|--|----------------|----------------|--------------|---------|--------|
| Fomentations and saline baths ... | 5 | — | 2 | — | 5 |
| H ₂ O ₂ and fomentations ... | 2 | 1 | — | 1 | 3 |
| Fomentations ... | 2 | 4 | — | — | 6 |
| Eusol... .. | 3 | 1 | 2 | 1 | 4 |
| Dry gauze ... | — | 1 | — | — | 1 |
| Healed | — | — | — | — | 2 |

The figures in the individual groups are too small for any great attention to be paid to them, but it is hoped that in the future this drawback will be removed by the publication of larger lists which will include all cases treated by any one method. They are also probably misleading, in that the treatment was to a certain extent selective, so that the methods which in the above table appear to give the worst results were applied to the most severe cases because they were regarded as being the most likely to control sepsis. It is when the figures are considered collectively that the results are seen to be unsatisfactory, but since these results are given by various forms of treatment they will act as a good basis of comparison with other methods.

Cases Treated with the Antiseptic.

We propose before considering the cases themselves to describe briefly the antiseptic we advocate and the method of its application. The antiseptic itself is by no means new and we do not claim any originality in its use; we only wish to point out that extremely beneficial results are obtained with it, and we hope, therefore, that it may be given a more extended trial. It is prepared by rubbing together in a mortar crystals of pure carbolic acid and camphor in equal parts by weight—a perfectly clean sweet-smelling liquid being thus obtained.

As is the case when using any other application, it is primarily essential to provide adequate drainage. When seen in a relatively early stage the wound, if deep or punctured, should be opened under general anaesthesia so as to eliminate, as far as possible, any pockets in the tissues and all foreign

bodies, loose pieces of bone, or necrotic tissue should be removed. When the wound has been freely opened sufficient of the liquid is poured in to reach the whole surface of the tissues. In large wounds as much as one or two fluid ounces may be required, although as a general rule one or more fluid drachms are sufficient. Drainage-tubes are inserted as required and packed round with gauze soaked in the fluid. On the surface dry gauze is applied. It is only necessary to change the dressing every 48 hours, when a few drops of the fluid are poured down the tube and fresh soaked gauze applied to the raw surfaces. When the treatment is commenced some days or weeks after the infliction of the wound it is again necessary to open up all sinuses and pockets so that the fluid may reach all the septic areas, and if necessary tubes should be inserted so that free drainage is established. The fluid is then used in the same manner as previously. It is noteworthy that the fluid can be handled freely without doing any harm to the skin, but if left for a prolonged period in contact with the patient's skin around the wound a certain amount of burning may be caused; for this reason surface dressings should be formed of dry gauze. It is rarely necessary to smear the surrounding skin with sterilised vaseline.

The effects of the fluid, if applied shortly after the wound is inflicted, are, firstly, to dry the surface of the wound. The tissues become covered with a thin white slough, which at first remains moist, so that the wound looks as though it were covered with a layer of moist cotton-wool. In one or two days this slough dries and there only remains a small amount of serum in the depth of the wound. All foul odour rapidly disappears.

If the wound is seen in a later stage, when there is already a large quantity of pus present, a more prolonged period elapses before the surface of the wound dries, and we have frequently noticed that, if there is a pocket of pus undrained into which the antiseptic does not enter, the surface will not dry. In such cases a large quantity of pus will escape with each dressing, although the sepsis remains localised. Such a condition is an indication for further drainage. Doubtless, under such circumstances, the carbolic is rapidly diluted by the fluid passing from the pocket, and thus loses its effect. After the pocket has been opened the drying effect is soon seen. It will be noticed that several of our cases continued to have a large amount of discharge until more free drainage was provided, after which it rapidly ceased. Since this drying effect is so marked it is essential that this method of treatment should not be combined with other methods. If the wound be syringed out with saline or peroxide each time it is dressed the good effects of the carbolic mixture will be lost.

In a few days, 3-7, after the formation of the sloughs they begin to separate, leaving behind a healthy surface of dry granulation tissue, which rapidly contracts until the wound is healed. In some cases it happens that after the cavity of the wound has filled up, the further application of the mixture seems to hinder the growth of the surrounding epithelium, in which case it should be discontinued and a more soothing application used.

Of more importance than the effects upon the surface of the wound are the general changes. Within one or two days of its application all redness and swelling disappear, the surrounding tissues become soft and flaccid, and with this the temperature falls to normal. In our experience this effect is in marked contrast to that often following other methods of treatment, especially the use of baths. In more severe cases the latter form of treatment is often followed by great swelling of the surrounding tissues, which become red and boggy, and local collections of pus form until the limb shows a spreading cellulitis. Multiple incisions have to be made, or in many cases the limb has to be amputated. In not one of our cases treated with the carbolic mixture has such a condition arisen. The worst that has ever happened has been the discharge of a large amount of pus from an insufficiently drained pocket, or, if the exit be occluded, the formation of a local abscess. Not only was it never necessary to amputate a limb, but in several cases treated by other methods amputation was considered, but when the treatment was changed to the carbolic mixture the symptoms rapidly improved and the limb was saved. (Vide Cases Nos. 22, 24, 26, and 30.)

Two other factors are of very considerable value. The first is the absence of pain. When the first dressing is applied there may be considerable smarting lasting for one or two hours. After this the anaesthetic value of the

TABLE II.—CASES TREATED WITH CARBOLIC MIXTURE.

| No. | Age | History. | Condition on admission. | Treatment. | Progress. |
|-----|-----|---|---|---|--|
| 22 | 29 | Wounded, France, 19/7/16; rifle bullet through l. elbow; humerus and ulna smashed. No operation. | 24/7/16: Huge wound l. elbow; whole joint shot away; many loose fragments of bone. Much pus and sloughing of tissues. Hand movement good. T. 102°. | Dry gauze in France. Fomentations and saline baths; later, carbolic and camphor. | Wound cleaned with baths and fomentations, but T. 102° and much swelling of arm. 30/8/16: T. 103°. Swelling increased; amputation considered. Lower end of humerus removed; wound freely opened; filled with carbolic. In 4 days T. normal. No swelling. 10/10/16: Clean wound nearly healed. 4/11/16: Sinuses only; no movement at elbow. |
| 23 | 33 | Wounded, France, 5/8/16; portion of H.E. shell l. upper arm. Walked to dressing station; first-aid dressing; wound cleaned and splint at clearing station. | 8/9/16: Small irregular wound l. upper arm; much swelling; foul-smelling pus. T. 101°. X ray = comminuted fracture neck of humerus. | Dry dressings in France. Fomentations; later, carbolic and camphor in England. | Slight improvement. Later, collection of pus below wound. Carbolic and camphor injected 15/9/16. Still much pus; wound did not dry; opened 22/9/16. Rapid improvement; healed, 9/10/16. |
| 24 | 25 | Wounded, France, 5/8/16; fragment H.E. shell outer side l. upper arm. At C.C.s. tube inserted; saline irrigation. | 14/6/16: Irregular wound outer side l. upper arm; much pus and sloughs; wound 3 x 2 in.; bare bone. Comminuted fracture neck of humerus. Considerable swelling. T. 102°. | Tubes, saline irrigation, France. Fomentations; later, carbolic and camphor, England. | At first but little progress. Much pus and swelling after 4 weeks. Carbolic and camphor then injected. Rapidly improved; pus decreased; swelling disappeared. Healed in 2 more weeks. |
| 25 | 24 | Wounded, Guilleumont, 16/8/16; rifle bullet r. arm. Lay in shell-hole 3 hours; field dressing. Rouen on 19th; operation; F.B. removed; wound picked salt tablets and gauze. | 23/8/16: Large wound outer side r. arm. Smaller wound inner side. Both foul. Pus and sloughs. T. 103°. Some swelling and redness around. X ray = comminuted fracture of humerus, and redness around. X ray = comminuted fracture of humerus. | Salt packs in France. Carbolic and camphor in England. | T. normal next day; swelling all disappeared in 2 days. 15/9/16: T. normal; no swelling; little pus. 6/10/16: Small sinus, good union. 4/11/16: Healed. |
| 26 | 25 | Wounded in France, 6/8/16; rifle bullet through r. foot; field dressing. Next day anæsthetic; pieces of bone and boot leather removed from wound in sole; saline irrigations. | 10/8/16: Small septic wound in front l. ankle. Wound 2½ in. diameter on sole; much slough, bone fragments, and foreign matter. Tendons and muscles all destroyed; redness and œdema of whole foot. Comminuted fracture of tarsus; several boot-nails in bone. | Saline irrigations in France. Immediate amputation considered, but carbolic tried. | In 2 days T. normal; swelling rapidly decreasing. On 14th many sloughs with 2 nails and pieces of leather came away. 15/9/16: Clean; rapidly healing; no swelling. 29/9/16: Walking; small sinus only; perfect ankle movements. |
| 27 | 24 | Wounded, 7/8/16, France; rifle bullets through l. arm and l. thigh. At dressing station, tubes; wounds irrigated H ₂ O ₂ . | 20/8/16: Wounds inner and outer aspects of l. arm; both very septic. Pus and sloughs; swelling of whole arm. Fracture of humerus 2 in. above elbow. Two very septic wounds in l. thigh. T. 102°. | Irrigations H ₂ O ₂ ; gauze dressings France. Carbolic and camphor on gauze, England. | Rapid improvement. 16th: T. normal; no swelling or pain; wounds dry. 15/9/16: Wounds rapidly healing. 6/10/16: Small sinuses; good union. 2/11/16: Wounds healed. |
| 28 | 40 | Wounded, 16/9/16, Guilleumont; shrapnel in l. leg. 17/9/16: Operation, wound cleaned; no tube. | 20/9/16: Irregular septic wound 2 in. middle of l. tibia; much pus; muscles sloughing. Fragments of tibia in bottom of wound. Piece of shrapnel between fragments. Swelling surrounding tissues. T. 101°. X ray = comminuted fracture of tibia. | Gauze soaked in saline in England. Gas; fragment of shrapnel removed. Tube; carbolic and camphor in wound. | 22/9/16: No swelling; T. normal; pus less. 5/10/16: Wound clean; bone covered; no pain or swelling. 12/10/16: Small healing wound; no bare bone. 1/11/16: Small sinus only. |
| 29 | 22 | Wounded, 14/9/16, France; H.E. shell; fragment entered behind r. elbow and emerged in forearm. | 22/9/16: Round wound 1 in. over r. olecranon; contained pieces of coat; very septic. Large irregular wound upper forearm; muscle very lacerated; much pus and sloughing. Fracture of ulna. T. 101°. Arm very swollen. | Packs of gauze soaked in saline. Tubes; carbolic and camphor in England. | First 2 days drainage insufficient; tubes then inserted. Next day swelling much less; T. normal. 5/10/16: Clean wounds; T. 38°; no swelling. 3/11/16: Small sinus only; good union. |
| 30 | 20 | Wounded, 8/9/16, Delville Wood; rifle bullet in back of neck. Operation Rouen 9th, bullet removed. | 8/9/16: Irregular wound 3 x 2 in. back of neck. Spines 4, 5, 6 c.v. fractured. Many sloughs; muscle much lacerated; very foul. T. 101°. | Gauze wrung out in saline in France. Carbolic and camphor in England. | Next day T. normal; no swelling. In 4 days wound covered with clean granulation tissue. 5/10/16: Small surface wound only. 12/10/16: Healed. |
| 31 | 29 | Wounded, 15/9/16, High Wood; H.E. shell; l. arm smashed. Injury to r. arm. Lying out 9 hours. L. arm amputated next day. C.C.s. | 21/9/16: Circular amputation middle of l. humerus. No flaps; large wound outer side removing all deltoid; wound 5 x 4 in. Wound 3 x 2 in. ulnar side of r. forearm; similar wound radial side; free communication. Bare tendons crossing; piece of ulna removed. All wounds very septic; foul o lour. T. 102°-50. | Dry gauze in France. All wounds packed with gauze soaked in carbolic and camphor. | 23/9/16: Wounds much cleaner; T. 100°. No o lour, no swelling, drying. 15/10/16: Wounds quite clean; all sloughs away; clean granulation tissue; T. normal; no swelling at all. 6/11/16: Superficial clean granulating wounds rapidly healing. |
| 32 | 41 | Wounded, 4/9/16; rifle bullet through r. thigh 6 in. above knee. At C.C.s. posterior splint; dry gauze dressing. | 15/9/16: Clean wound of entry front of r. thigh 6 in. above knee; 2 in. wound posteriorly; very septic, much pus. X ray = transverse fracture of femur; backward displacement lower fragment. T. 101°-10. Swelling of thigh and knee. | Dry gauze in France. Wound packed with gauze soaked in carbolic and camphor. Fragments manipulated under anæsthetic; extension. | Wound rapidly cleaned. 20/9/16: T. normal; no swelling. 12/10/16: Wound nearly healed; commencing union of fracture. 7/11/16: Wound healed; good union. |
| 33 | 28 | Wounded, 15/9/16; shrapnel in r. shoulder; C.C.s. wound plugged; splint. At Boulogne plugging changed; saline gauze. | 21/9/16: Small wound of entry outer side of r. shoulder; much pus escaping; great swelling of shoulder and upper arm. T. 101°. X ray = oblique fracture of shaft of humerus; piece of shrapnel on bone. | Saline gauze in France. Tube inserted; carbolic and camphor run down into wound. | Rapidly improved; T. fell to normal in 2 days. 29/9/16: Very little pus; no swelling. 6/10/16: Tube out; no swelling; no pain. 4/11/16: Small sinus only; good union. |
| 34 | 23 | Wounded, 15/9/16; rifle bullet through l. arm. C.C.s. gauze dressing only. At Blaples splint applied; still dry dressings. | 24/9/16: Small entry wound posterior border of l. axilla; wound of exit middle of outer surface of arm. Much pus; swelling of whole upper arm. T. 100°. Humerus fractured in centre; Musculo-spiral paralysis. | Dry dressings in France. Carbolic and camphor on gauze plugging. | 29/9/16: Swelling less but drainage not very good; much pus can be squeezed out. 3/10/16: Anæsthetic, wounds opened; tubes, 10/10/16: Much better; T. normal; no swelling; less pus; local abscesses opened 18th and 7/11/16. Healed 20/11/16. |
| 35 | 27 | Wounded, 3/9/16, Guilleumont; rifle bullet entered l. heel, and was removed from between 2nd and 3rd toes; out for 24 days. 11/9/16: Saline irrigation commenced. | 16/9/16: Septic centre of entry centre of l. heel. Irregular wound between 2nd and 3rd toes. Swelling of whole foot. T. 100°. X ray = fracture of os calcis and head of 3rd metatarsal bone. | Dry dressing; later saline irrigation, France. Carbolic and camphor dressing. | Swelling and discharge rapidly decreased. 29/9/16: Slight pain and swelling centre of sole. 1/10/16: Small abscess in sole opened. 10/10/16: All wounds nearly healed; T. normal; no swelling. 7/11/16: Healed. |
| 36 | 32 | Wounded, 24/8/16, H.E. shell fragment in neck and r. arm. Operation same night; tubes. | 29/8/16: Over lower and inner r. humerus wound 2 x 2 in., deep and septic. Exit wound middle of post. aspect of forearm 3 x 2 in.; very foul and septic. Movements at elbow limited. Sensory loss ulnar area of hand. Fracture of int. condyle of humerus. T. 102°. | Gauze soaked in saline in France. Carbolic and camphor. | Rapidly improved. 4/9/16: T. normal; no swelling; wounds drying; white sloughs, 18/9/16: Wounds nearly healed. 2/10/16: Still small unhealed area, upper wound; movements good. 18/10/16: Wounds healed. |

TABLE II.—CASES TREATED WITH CARBOLIC MIXTURE (Continued).

| No. | Age | History. | Condition on admission. | Treatment. | Progress. |
|-----|-----|--|--|---|---|
| 37 | 31 | Wounded, 16/9/16, France; shrapnel struck r. leg. Fell but soon able to walk 1 mile. At Le Touquet shrapnel removed from head of r. tibia. | 25/9/16: 3 in. incision over head of r. fibula; pus and gas bubbles escaping. Redness and oedema of whole leg; knee flexed, joint very tense. T. 104°-5°. Knee aspirated; much pus; opened freely each side of patella. Synovial membrane and part of cartilage destroyed. | Syringed with 1 lb. H ₂ O ₂ . Fomentations in France. Joint swabbed out and packed with gauze soaked in carbolic and camphor; tubes. Wound dried. | T. fell but little in 2 days. Much pus escaping from joint wounds; swelling of leg rapidly decreasing; counter opening into joint behind; rapid improvement. 16/10/16: T. normal; wounds drying; no swelling. 8/11/16: Doing well; sinuses only; knee ankylosed. |
| 38 | 34 | Wounded, 17/9/16, France, by hand grenade; r. leg broken; operation same day; wounds opened; Carrel's treatment 3 days. Fracture pegged. Eusol irrigation continued through tubes whilst in train. | 25/9/16: Large raw wound 5 × 3 in. over centre of r. tibia. Many sloughs and much pus. Fracture of tibia in centre of wound. Bone bare and dead 1½ in. either side of fracture. T. 100°. Swelling of leg. | Carrel's treatment 3 days in France, followed by eusol dressing. Carbolic and camphor in England. | Slight improvement first few days. Then inadequate drainage owing to fragments overlapping. Bone patted 14/10/16: 3 tubes. 8/11/16: Doing well; still pus; T. normal; bone nearly covered; no swelling. 21/11/16: Much cleaner; X ray shows good involucrum. |
| 39 | 35 | Wounded, 16/9/16, France; rifle bullet wound opened, tube inserted. | 24/9/16: Perforation r. foot at base 3rd toe; both wounds very septic. T. 101°. Swelling of distal half of foot. X ray = fracture of 3rd metatarsal and phalanx. | Tube and fomentations in France. Carbolic acid and camphor in England. | Wounds rapidly improved. On second day T. normal; no swelling; still pus. 14/10/16: Nearly healed; very little pus. 8/11/16: Healed. |
| 40 | 35 | Wounded, 3/9/16, France; piece of shrapnel entered back. 10 hours later operation at c.c.s.; wound opened; dura found opened; dry gauze dressings. | 5/9/16: Large septic wound to l. of lower lumbar vertebrae; edges covered with foul sloughs. Broken bone felt at bottom of wound; cerebro-spinal fluid escaping. Cauda equina lesion. | Dry dressing. France. Carbolic and camphor, England. | Wound rapidly cleaned. No escape of C.S.F. on 20th; re-appeared on 25th; ceased again on 28th. 10/10/16: Wound quite clean; still deep sinus. 8/11/16: Small sinus only. |
| 41 | 22 | Wounded, 15/9/16, High Wood; piece of H.E. shell entered outer side of r. knee. Buried; dug out at once. Field dressing. At Etaples syringed H ₂ O ₂ ; saline gauze. | 21/9/16: Large, irregular wound outer side of r. knee. Septic, covered with sloughs. Good deal of pus. Communicated fracture post. surface of condyles of femur; tissues around swollen. T. 101°. | Saline gauze and H ₂ O ₂ ; France. Carbolic and camphor in England. | Wound rapidly cleaned; T. normal in 3 days; all swelling and pain ceased. 12/10/16: Wound healing rapidly; no swelling or pain. 6/11/16: Wound healed. |
| 42 | 22 | Wounded, 23/9/16, High Wood; shrapnel entered l. thigh near lower third; fell at once. Wooden splint and dry dressing at c.c.s. Next day wound opened; tube, saline gauze. Bullet removed on 27th. | 10/10/16: Small septic wound anterior of inner surface of l. thigh 4 in. above knee. Exit wound postero-external surface; large, septic, pus. T. 99°. Swelling of limb; comminuted fracture of femur. | Saline gauze and drainage. France. Carbolic and camphor, England. | 16/10/16: Doing well; T. normal; no swelling. 7/11/16: Good union; still small sinus posteriorly; T. normal; no swelling or pain. |
| 43 | 22 | Wounded, 15/9/16, Delville Wood; rifle bullet through r. leg. In shell-hole 7 hours. Opened at c.c.s. on 16th; dressed gauze soaked in eusol. | 24/9/16: Wound 2½ × 2 in. over anterior of upper part of r. tibia. Bare fragments of bone in centre; very septic. T. 101°. Considerable swelling of leg; heated wound in calf. Comminuted fracture of tibia. | Eusol gauze in France. Carbolic and camphor, England. | At first drainage not satisfactory; fragments of bone and dead b. removed. 12/10/16: Clean cavity in bone; no swelling. 6/11/16: Still little pus from sinus; good union. |
| 44 | 22 | Wounded, 25/9/16, Fiers; pieces of H.E. shell struck r. foot and l. ankle. Field dressing. 2 days later at base hospital H ₂ O ₂ baths. | 11/10/16: Large wedge-shaped wound across r. heel. Lower part of os calcis and part of astragalus shot away. Post. part of heel dropping backwards; gap 2½ in. wide; good deal of swelling; much pus and sloughing. T. 101°. | Dry dressings. France. H ₂ O ₂ fomentations, England; later, carbolic and camphor. | Rapid improvement; in 2 days T. normal; no swelling. 30/10/16: Wound clean; T. normal; no swelling. 8/11/16: Healing; still cavity with bare bone. 21/11/16: Cavity rapidly decreasing. |
| 45 | 30 | Wounded, 15/15, France; multiple shell wounds l. thigh. Splint and dry dressings. France. | 11/5/16: Large foot wounds in front of l. thigh 5 × 3 in. and 2 × 1 in.; much pus. T. 100°. Sloughing of muscles; femoral vessels exposed. X ray = linear fracture of tibia; complete fracture of femur. | Dry dressings. France. H ₂ O ₂ fomentations, England; later, carbolic and camphor. | Very little progress. 20/5/16: Wounds sloughing; much pus; pain severe; T. 100°-102°; several fragments of bone came away. 11/6/16: Abscesses opened. 2/7/16: Carbolic applied; T. normal next day; never rose; wounds rapidly healed. 19/8/16: Splint removed; clean granulations in wounds. 8/9/16: Wounds healed. Rapid improvement, but tendency for pus to collect around fragments; two small abscesses opened 4/9/16. Oct. 1st doing well; T. normal; still purulent discharge. 8/11/16: Small abscess only. |
| 46 | 33 | Wounded, 13/7/16, France; shrapnel wound r. thigh. Saline dressing and Thomas knee splint at base. | 13/7/16: Large, irregular wound outer side lower r. thigh. Muscles much lacerated; wound very foul. T. 102°. X ray shows transverse comminuted fracture lower third of femur. | Saline gauze in France. Camphor and carbolic, England. | Rapidly improved; T. normal in 2 days; all swelling and pain decreased. 12/10/16: Ant. wound healed; post. still a little sero pus; no swelling or pain. 8/11/16: Healed; good union. |
| 47 | 23 | Wounded, 1/9/16, Guillemont; machine-gun bullet through l. thigh. Opened and dried at base; Thomas splint and saline dressings. | 11/9/16: Wounds 5 × 4 in. front of l. thigh. 7 × 6 in. back of thigh. Much pus, sloughing, and foul odour. Tube right through; swelling of tissues around. T. 100°. X ray = comminuted fracture middle of femur. | Saline gauze, France. Camphor and carbolic, England. | Pain ceased at once; wound quite clean and granulating in a week. 16/10/16: Wound one-third of its original size, quite clean. 7/11/16: Healed, irregular scar, good movements. |
| 48 | 36 | Wounded, 4/9/16, Somme; several machine-gun bullets through r. scapula. Anaesthetic at base; wound opened; pieces of bone removed. | 11/9/16: Wounds small, 1 in. below each malleolus. Foul purulent discharge; much swelling of foot. T. 102°. X ray = comminuted fracture of astragalus, l. clavicle; very septic; bare bone in wound. T. 99°-5°. Swelling of the whole shoulder. X ray = fracture clavicle and scapula. | Saline gauze, France. Camphor and carbolic, England. | Swelling and pain decreased immediately. On 21/10/16 local abscess opened; after this rapidly improved. 18/10/16: Wounds clean. 8/11/16: Small sinus only. |
| 49 | 28 | Wounded, 6/9/16, Somme; shrapnel bullet through l. foot; operation next day; foreign matter removed; wound drained. | 13/10/16: Large wound on outer side l. leg. 3 × 4 in. X ray = fracture clavicle and scapula. | Syringed H ₂ O ₂ ; dry dressings. France. Camphor and carbolic, England. | 18/10/16: T. normal; no swelling. 30/10/16: Wound granulating; T. normal; no swelling. 7/11/16: Healing rapidly. |
| 50 | 27 | Wounded, 30/9/16, Somme; shrapnel wound l. shoulder. Operation 4/10/16; metal removed. | 13/10/16: Large irregular wound outer side l. leg. 3 × 4 in. X ray = fracture clavicle and scapula. | Eusol dressings. France. Carbolic and camphor, England. | Wound rapidly cleaned. 16/10/16: Whole of peroneus longus came away as a slough; T. normal. 8/11/16: Healing rapidly. |
| 51 | 30 | Wounded, 3/10/16, Fiers; H.E. shell through l. leg. Eusol dressings applied twice daily since. | 10/10/16: Large irregular wound outer side l. leg. 3 × 4 in. X ray = comminuted fracture of os calcis and astragalus. | Eusol gauze in France. Carbolic and camphor, England. | Rapidly improved; all swelling disappeared in 2 days; T. normal. 16/10/16: Entry wound healed; exit clean. 7/11/16: Wound very small, nearly healed. |
| 52 | 25 | Wounded, 26/9/16, France; bullet through l. foot. Lay out 24 hours with field dressing on. At dressing station eusol compresses applied. | 12/10/16: Healed wound anterior aspect lower third of l. thigh. Large irregular wound back of thigh. 4 × 3 in. Much pus and sloughing; swelling of thigh. T. 100°. | Eusol dressings in France. Carbolic and camphor, England. | 20/10/16: T. normal; no swelling, good deal of pus. 30/10/16: Wounds cleaning; T. normal. 8/11/16: Small sinus posteriorly. Commencing union. 21/11/16: Good union, wound healed. |
| 53 | 29 | Wounded, 27/9/16, portion of H.E. shell through l. thigh. Lay out 22 hours, operation 2 days later; pieces of shell removed; drained; eusol dressings. | | | |

carbolic is felt, and no pain is experienced when the dressing is changed. The second factor is the infrequency with which the dressings have to be changed, as a general rule once in 48 hours being sufficient. This fact, to our minds, strongly recommends the use of this dressing to cases about to be sent from France to this country, for in their attention to the wound has of necessity to be interrupted. Strangely enough, Sir Almroth Wright states that this "increases a hundredfold the difficulties which stand in the way of a successful application of antiseptics." It appears to us, on the contrary, that the application of antiseptics by the method we advocate is much more readily carried out under such circumstances than any form of irrigation of the wounds with saline, for most cases will be able to complete the journey without the dressings having to be changed.

To cases in London hospitals also not only does this fact mean much less disturbance and discomfort to the patient, but it very materially lightens the work of the nursing staff, a fact of great importance after a big attack when all the wards may be filled with a number of severely wounded men. Since all foul odour rapidly disappears the comfort of the patient himself and of others in the ward will be greatly increased.

Four Questions of Interest.

During the time we have used this method four questions of interest have arisen. The first is one to which much attention has been paid—namely: Can a septic wound be rendered aseptic by the application of antiseptics? This question is, of course, far from clear, for it ignores entirely the time factor. If it means can the wound ultimately be rendered aseptic, we would answer that, in company with any other method which leads to healing, it does render it aseptic. If, on the other hand, it means can the wound be immediately made aseptic, we would endorse the view that no antiseptic, nor any other treatment that has been devised by man, can be relied upon to do this. As far as we can ascertain, no one has ever made such a preposterous claim, although much ingenuity has been shown in proving such claims to be erroneous. It has been our experience, however, that the antiseptic we use makes a wound aseptic more rapidly than any other method we have seen.

The second question is: Can the antiseptic be applied several days after the wound has been inflicted? It will be noticed with the cases we report that we have been in the habit of applying the antiseptic at any time after the infliction of the wound, even when there is a large quantity of pus. In one case (No. 22) the carbolic was only applied after other methods had been in use for six weeks, beneficial results immediately following. The majority of the cases in which it has been used have not come under treatment until several days after the infliction of the wounds. In no case has any evil effect followed. This is of importance, for Sir Watson Cheyne has stated that in the late stages the use of antiseptics may open the way to a general infection and strongly advises against their use in suppurating wounds. It would appear, however, that his objections are mainly theoretical, for no cases are cited to support his view. Our experience has been to the contrary, for although, as already shown, we have had several cases of spreading infection where other methods were used, this has not once occurred when the carbolic was used.

The third question is: Will not the sloughing caused by the use of so strong an antiseptic be prone to lead to secondary hæmorrhage and injury of nerves? Again we can answer this question by stating that in no single case have we seen such a complication arise, and this not only applies to the cases of compound fracture reported here but to all other cases, now numbering some hundreds, which we have treated by this method. Cases of secondary hæmorrhage have not been uncommon with military wounds, but every case we have seen so far has occurred where other treatment was adopted. The fears that destruction of the tissues may be caused by the antiseptic are, we feel, greatly exaggerated. That a slight amount of tissue on the surface is destroyed is certain, but the amount is insignificant when compared with the original destruction and the ravages of sepsis. In one case (No. 40) there was a large septic wound leading down to the spine with the escape of cerebro-spinal fluid. The carbolic was applied in the usual way, but no ill-effect upon the cord or nerve roots followed.

The fourth question is: Will not the use of the carbolic acid in so high a concentration give rise to carboloria? Sir Watson Cheyne¹ has regarded this as the chief drawback to

its use, but has brought forward no evidence that it ever occurs. We believe that it is highly improbable that any absorption will ever take place when the wound is freely drained and the carbolic is not under pressure. This is amply confirmed by our experience, for although careful watch has been kept for the presence of this complication, we have never seen it arise.

Results of the Antiseptic Treatment.

When the results of the treatment of the individual cases are investigated the first important factor to be noted is that no cases have required amputation in the total of 31, and there have been no deaths; a very great difference from the results seen with the control cases. The absence of any amputation is specially remarkable in that 8 of the cases—viz., Nos. 22, 24, 26, 27, 31, 37, 38, and 49—showed conditions in which at first sight it appeared hopeless to attempt to save the limb. In No. 22 there was already spreading sepsis of the arm when the treatment was commenced, and although a very prolonged period elapsed before healing took place, the sepsis rapidly became localised after the application of the antiseptic and the use of a normal hand was preserved. No. 26 showed most extensive sepsis and comminution of the tarsus, so that immediate amputation was considered, but the wound rapidly cleaned and ultimately healed. Case 37 had a knee-joint filled with pus and partly disorganised, a condition which is so often followed by fatal results, but on the application of the antiseptic the toxæmia disappeared and the sepsis became localised in a remarkable manner so that the patient will be left with a useful leg although the knee-joint will, of course, remain ankylosed. All of these cases showed degrees of sepsis and destruction of tissue as marked as any of those in the first group which required amputation.

It so happened that among the cases treated with the carbolic and camphor mixture there were none of clean perforating wounds made with rifle bullets, such as formed nearly 25 per cent. of the cases in the first table. In the later months fewer of these cases have come under our care; possibly they are being treated for the whole of their course in France. In the earlier months we did not treat these cases with the antiseptic which was reserved for the more severe cases. This may explain their absence in this group, the majority of cases of which were grossly infected when the treatment was commenced. The absence of such mild cases makes the results of this antiseptic treatment even more creditable.

It will be seen that in 7 of the cases—viz., Nos. 23, 34, 37, 38, 45, 46, and 49—the drainage was at first inadequate, so that either a large quantity of pus continued to escape or a local abscess formed and further drainage had to be instituted. It is to be noted, however, that in every case the pus was localised. There was no tendency whatever for the appearance of cellulitis; as so often occurred when other methods of treatment were used, and in no case were multiple incisions or incisions at a distance from the wound required.

It will be seen that all the cases were very septic when they arrived in England, whatever the previous method of treatment had been. This was specially so in those cases which had been treated with saline or salt packs, the majority of them having a very foul odour and showing much sloughing.

It is true that the number of bone cases which we have treated by this method is at present small, but even in so small a series the fall in the death-rate from over 10 per cent. to nothing, and in the amputation rate from over 20 per cent. to nothing, is very striking, as is also the absence of all spreading sepsis, and we believe, from our experience of its use with other types of case, that observation of a larger series will give equally good results.

We would advocate the use of carbolic and camphor dressing in all cases of sepsis because we believe that our lists of cases show that:—

It overcomes sepsis more rapidly than other methods.

With its use amputations are much less frequent.

It diminishes pain rather than increases it as is so often the case with other dressings.

The dressing requires to be changed only at long intervals.

Its use is associated with no danger.

The amount of work in the ward is greatly diminished.

It is most suitable to the conditions of modern warfare and can be easily applied to cases that have to travel.

Continued at foot of next column.

THE CEREBRAL ASSOCIATIONS OF RAYNAUD'S DISEASE.¹

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In a historical summary the author showed that Raynaud² became more and more convinced that the explanation of the peripheral symptoms should be sought in some change in the central nervous system. In regard to the symmetrical nature of the disorder he said that there is "une remarquable tendance à la symétrie."³ The author then continued:—

In enumerating the predisposing causes Raynaud notes that those chiefly affected are persons of a "nervous or lymphatic" temperament; and in the history of the patient he lays stress upon the influence of neuroses, especially hysteria and epilepsy. Several cases which I have had opportunity of observing—among them, three soldiers who have been in active service—and a brief survey of the literature of the subject have served to strengthen the impression of the importance of the nervous element in the production of this disorder. To deal with the condition from all points of view even in a cursory manner would entail much time and energy; it may not, however, be without interest to gather together a group of symptoms illustrating one aspect of Raynaud's disease and to note the cerebral disorders which may be associated with it.

"Hysterical" Symptoms.

Among Raynaud's cases there are some which exhibited markedly the "hysterical" element (Obs. II. and III.).

In another case (Obs. VIII.), quoted from Landry,⁴ that of a woman aged 22, the symptoms were still more marked. With the local asphyxia was such intense pain that the slightest touch produced convulsions. Later in the attack the pains recurred and the convulsions rendered restraint necessary. There was no globus hystericus. The fits, which continued for nearly two months, were not apparently epileptic but hysterical. Nine months later, when she was pregnant and had improved in health, her husband died and she had violent convulsions followed by "délire nerveux" which passed in three days. Another interesting symptom—to be referred to again—at this time was "complete aphonia." At times there was analgesia of almost the whole of the body, without anaesthesia. Later in the attack she attempted suicide by taking laudanum; she became comatose, but rallied and recovered from this. She is stated to have had no recollection of this incident. She improved for a time, but died later of phthisis. Raynaud remarks that "the hysterical convulsions always accompanied the paroxysms of pain in such a way that it is legitimate to place them to the account of the latter in proportion as the malady developed and became established the nervous symptoms became generalised and aggravated, aided by moral emotions of which the influence was undoubted."⁵

Other cases here mentioned were Obs. IX. and XV., Case III. of Raynaud's "New Researches," and a case of Hale White.¹⁰

The term "hysteria" is generally a rather unsatisfactory one. Frequently it appears that symptoms which do not fall into more definite categories are heaped together under the name of hysteria. Rheumatism and hysteria have more offspring fathered upon them than they can reasonably claim. Raynaud may have been right in calling the seizures in, for instance, Obs. VIII. hysterical; but it is not unreasonable to suggest that they might have been to a considerable extent spasmodic and secondary to the vasomotor condition. Monro appears to be of this opinion in regard to Obs. XV. The "hysterical phenomena," he says, "seem to have been due to the exhaustion and pain caused by the vasomotor disorder in one who had previously been neurotic."¹¹ It has been said that "hysteria may mimic all other maladies"; but the same writers remark that the

greatest danger arises from failing to appreciate the limitations of hysteria and allowing its presence to interrupt careful search for organic disease of which it may be a secondary expression."¹² It is the more necessary to heed this warning in such a condition as Raynaud's disease where there undoubtedly are in certain cases changes in the cerebral circulation. Until, however, we know the etiological factors in hysteria and epilepsy, discussion of details is likely to be barren of results. Nor is knowledge much further advanced when we come to consider the "congestive attacks" and the seizures of general paralysis of the insane, infantile convulsions, or the fits of chronic alcoholics. Are the fits primarily associated with the nerve-cells or are they secondary to changes in the circulatory system? To this we have no satisfactory explanation.

The convulsions of a hysterical nature already mentioned shade almost indefinitely into seizures of a more obviously epileptic nature associated with Raynaud's disease. Nor is this surprising when we realise how difficult it is to draw any distinct line between the various forms of convulsions. Nature does not proceed by leaps and bounds. The hiatuses described are blanks in our knowledge rather than definite intervals between one series of facts and another; and, however convenient they may be for purposes of description they are inimical to a proper perception of the uninterrupted processes of nature. So it is difficult to decide where, in the present instance, hysterical phenomena end and those of epilepsy begin.

In Raynaud's Case XIX., that of a female aged 32, in whom were observed local asphyxia and gangrene, there was a history of "epileptiform" attacks; and his justifiable comment is that "les antécédents épileptiques de la malade doivent ici entre en ligne de compte." In this case also there was apparently moral defect, for he tells us that she was arrested in several cases for vagabondage.

Other cases were also summarised here: Southey,¹³ Thomas,¹⁴ Osler,¹⁵ Colcott Fox,^{16a} Lévi and Raynaud,^{16b} and Solis-Cohen.^{16c} In a case of Osler he records occasional attacks of "dizziness and transient obscuration of consciousness," paresis and aphasia.

Epilepsy.

Raynaud's disease has been noted in several cases in association with definite epilepsy and with epileptic insanity. Here the local symptoms have been subsequent to more or less prolonged epileptic trouble.

Case XIX. of Raynaud's Thesis, which has already been referred to, would probably fail to be included in this category. In a case of Féré¹⁷ he was unable to obtain a definite history as to which condition preceded the other. The patient also exhibited a curious condition, a disseminated asphyxia over the body. (In a case of symmetrical congestive mottling of the skin reported by Cavafy there were no cerebral symptoms.¹⁸) Féré concluded that as the epileptic manifestations and the circulatory disorders seemed to have developed about the same time, and as they both showed marked predominance during the winter, it was permissible to establish a relationship between them. If this were so it would, as Féré points out, lend support to the angio-neurotic or sympathetic theory of epilepsy, a theory attributed to Schüeevogt and also to Charles Bell.

Bland recorded a case, a man aged 23, who had epileptic seizures for ten years previously and who at the time he developed symptoms of Raynaud's disease was acutely maniacal.¹⁹ I am able to add to this the case of a man, aged 35, who had had epileptic fits for at least seven years. He had recurring attacks of epileptic furor; he was at these times violent, intractable, and destructive; and, also during the phase of excitement, he was much influenced by auditory hallucinations. During a maniacal phase he developed an inflammatory condition of the forehead suggestive of erysipelas but not definitely so: this descended downwards to the face and passed off in a few days. After it had lasted two days local asphyxia of both feet was noticed, which subsided except from the toes which were gradually becoming more gangrenous when death resulted. The feet had been exposed to cold about this time as the patient tore all his clothing off and would not allow cotton-wool and bandages to remain on his feet.

Other cases are reported by Bernstein²⁰ and Wiglesworth.²¹

Mania and Melancholia.

Symptoms of Raynaud's disease have also occurred fairly frequently in mania not dependent upon epileptic excitement, in melancholia, and in the depressed phase of maniac-depressive insanity.

In a case of Southey, a boy aged 9, in whom gangrene of the right index finger developed, there were maniacal

Continued from preceding column.

References.—1. Bérard and Lumière: *Revue de Chirurgie*, December, 1915. 2. Carrel, A.: *Bull. de l'Acad. de Méd.*, lxxiv., No. 40. 3. Sir Watson Cheyne: *THE LANCET*, 1914, II., 1185; 1915, I., 419; 1915, II., 213; *Brit. Jour. Surg.* 4. Dakin, H. D.: *Brit. Med. Jour.*, 1915, II., 318. 5. Dalton, F. J. A.: *Ibid.*, 1916, I., 126. 6. Davy, W. B.: *THE LANCET*, 1916, II., 475. 7. Donaldson, M., Alment, E., and Wright, A. J.: *Brit. Med. Jour.*, 1916, II., 286. 8. Fraser, J.: *Ibid.*, 1915, II., 525. 9. Gray, H. M. W.: *Ibid.*, 1916, I., 2. 10. Roberts, J. E. H., and Statham, E. S. G.: *Ibid.*, 1916, II., 282. 11. Smith, Lorrain: *Ibid.*, 1915, II., 12. Taylor, K.: *Ibid.*, 1916, II., 321. 13. Sir Almoth E. Wright: *THE LANCET*, 1916, I., 1203; 1916, II., 503; 1915, I., 873.

symptoms. He was nervous, excited, cried constantly when examined or spoken to; and he was noisy especially in the evenings.²² Barlow says that Southey informed him that "since the publication of this case he had seen several examples of Raynaud's disease in asylum cases": the type of case is not specified.²³

Edgerley gives a case of a woman with Raynaud's disease during maniacal attacks. (The same author records a case which may be compared with Féré's. A woman, aged 37, who had had three previous attacks, developed ecchymoses over her body and limbs at the height of the excited period. Such a case, though not one which Raynaud would have included in his category, is interesting from the point of analogy. It might be more properly associated with the cases of "stigmata" upon which much stress is laid by many of the devout, more especially as she had delusions that she was being crucified and stoned²⁴.) Macpherson also relates a case²⁵ with acute mania.

In maniac-depressive insanity the symptoms of Raynaud's disease may appear either during the maniacal or during the depressed phase. Esquirol,²⁶ among others, has called attention to the alteration in the peripheral circulation which occurs so frequently among the insane.

Ritti remarks that he never observed them during the maniacal phase.²⁷ In contra-distinction to this I have observed a case of maniac-depressive insanity where the symptoms of Raynaud's disease appeared after about three weeks of intense excitement. In another case there was a history of two previous attacks of mania but no record of any pronounced periods of depression. She remained acutely maniacal for two months after admission. Her left forearm and hand were first affected with swelling and then discoloration; this disappeared, and then the right leg and foot were attacked. Next the left lower limb and side up to the axilla were affected. Later symptoms of gangrene appeared in the feet.

Urquhart recorded a case of Raynaud's disease in association with melancholia.²⁸ In a case reported by Shaw there were melancholic symptoms, delusions of poisoning, and suicidal tendencies.²⁹ Targowia also records a case.³⁰

Another of Urquhart's cases exhibited symptoms more suggestive of dementia præcox.³¹ I have observed a case of dementia præcox with marked negativism, restlessness, apathy, and progressive mental feeblement, who developed local asphyxia in both feet with patches of desquamation. He was then 25 years of age, and his mental symptoms had lasted for several years. Another case, a female aged 23, was stated to have begun to show mental symptoms at 21. She gradually became mentally enfeebled: she was confused, unable to converse, and childish. She was at times excited, restless, violent: occasionally thought that she was going to be burnt. She developed recurring local asphyxia of both feet.

The following cases I have had the opportunity of observing at the County of Middlesex War Hospital among soldiers who have been on active service.

Private A B, aged 19, went to France in April, 1915, and was in the trenches and under fire. In October was in hospital with "bad circulation." It was reported that on parade he did not appear to understand the orders given and sometimes wandered from the ranks. He complained that things were stolen from him. He rambled about at night and was much influenced by auditory hallucinations. He was depressed and wept. He was deluded, and said that "chloride of lime was being sprinkled over blood in the next room." He was dull, stupid, and confused; cerebration slow; memory defective. He had typical recurring attacks of local syncope and local asphyxia in the fingers and toes. He improved steadily and became bright and cheerful. After the mental improvement had become pronounced the circulatory troubles still continued and later he had an attack of aphasia to which reference will again be made.

Private C D, aged 21, went to France in January, 1916. He was in the trenches for five days; heavily shelled, but not struck or buried. On the last day in the trenches his officer was shot beside him. He was much shaken and later not able to recall events about this time very accurately. He was sent into hospital. He was at that time nervous, emotional, and depressed. He stated that when alone he felt as though someone were following him. He did not hear voices, but he felt as if "things were put into his mind." He said that on the day before admission to hospital in France he felt that he wanted to jump into the water. On return to England he was brighter, but still nervous and rather tremulous. The noises in his head he compared to the ringing of bells. For some time he had suffered from headaches; at nights he had "visions which were not quite dreams."

He had local syncope and local asphyxia of the first and second fingers of both hands, and these symptoms recurred from time to time. He had noticed this condition for years.

He believed that it came on after he had acute rheumatism and chorea. He said his mother suffered from a similar condition. Vision impaired; had observed a progressive weakening of his sight for some years; right pupil slightly larger than left.

This patient gave an extensive family history of nervous instability and of a tendency to vascular degeneration. On paternal side: Great-grandfather had hemiplegia; grandfather very excitable, became "mad if he took drink," eventually had a seizure and died; grandmother suffered from violent headaches, was of a very nervous temperament, marked hypochondriacal; a cousin is mentally deficient. His mother is nervous and hysterical. His brother is very excitable, and at times becomes confused and forgetful. This patient himself is shallow-complexioned and nervous. He says that he was troubled by "voices" when he was about 17 years old; and that about the same time he attempted suicide. He says that he was subject to convulsions as a baby.

Private E F, aged 40, exhibited a local condition approximating to Raynaud's disease, but which might be more accurately described in the category of acro-asphyxia. Both hands were from time to time cold and almost syncopal; in the succeeding asphyxial state they looked as if they had been dipped in a solution of indigo. He had had 15 years' service. In 1906 the left testicle was removed for "tumour." Just after this he had a "fit," and another a year later; During these fits he lost consciousness. In 1903, while in India, he had malaria; after this he first noticed the change in his hands. In May, 1915, he was buried by a shell explosion in France. He had a similar experience in September; history of gas-poisoning about the same time. In November he went to Salonica, where whilst walking with a friend he fell down suddenly and was unconscious for about 24 hours. He was sent back to England; on return was depressed, nervous, and tremulous; at times incoherent in speech. Twice he attempted suicide in what is described as "an ostentatious manner"; and is reported to have had some fits of an hysterical nature. Since I have seen him there have been no further fits or attempts at suicide. He has, however, been depressed and plaintive. He complained very much about his digestion and said that he had been unable to retain any food; but this was not noticed after his admission. Gradual improvement mentally and physically, but at the time of writing there is apparently some mental reduction and he is facile and more satisfied with his capabilities than his state warrants.

Mental Enfeeblement.

In certain cases the symptoms of Raynaud's disease in insane patients have been noted after mental enfeeblement had become pronounced; although it does not occur in demented cases to the extent that one might, *a priori*, imagine when the sluggishness of the circulation in such patients is considered. There is apparently some other factor; it may be the involvement of certain parts of the nervous system.

Cases given illustrative of this were those recorded by Iscovesco,³² Hutchinson,³³ Zambaco,³⁴ Barlow,^{34a} Ibotson,³⁵ Case XVI. of Thesis,³⁶ and Pitres and Vaillard.^{36a}

Aphasia.

The occurrence of aphasia in connexion with Raynaud's disease is rare.

He drew attention to it in his eighth case to which reference has already been made. From time to time there was complete loss of speech without inflammation, laryngeal pain, cough, or expectoration. He noted that no other nervous symptoms accompanied this loss of speech, and he appears to have thought it a part of the hysterical condition.³⁷

One of the most interesting cases with this symptom is recorded by Weiss.³⁸ Other cases here given were: Osler,³⁹ Stockman,⁴⁰ and Simpson.⁴¹

In the case of Private A B, already related, aphasia occurred after the symptoms of depression, delusions, and auditory hallucinations had passed.

He was a bright, intelligent youth, and did not seem in the least hysterical. The aphasic state began on the Saturday morning. He said he was trying to say something and could not. He had "felt a bit strange in the morning but could speak." The day before it seemed to him "as if things were muddled up. He felt limp and as if he was going to be ill." He could understand what was being said to him, but could not reply. He played the piano during the aphasic period; no hemiplegic symptoms. Speech returned suddenly Wednesday night. He said "he sat up in bed and spoke," and he continued able to speak thereafter. The muscles of his throat felt stiff and painful, due, he thought, to efforts he made to speak.

The association of aphasia with Raynaud's disease is an interesting and rare one. To look upon it as a hysterical aphonia is unsatisfactory. We do not know what hysteria is in spite of elegant explanations, and to explain one incomprehensibility by another advances knowledge little. The explanation given by Weiss seems plausible; he thought that the aphasia was due to a "spastic ischæmia in the region of the third left frontal convolution." A similar condition in other regions of the brain might account for other symptoms. Simpson suggested the varying symptoms in his case could "only be accounted for by corresponding attacks of cerebral anæmia or congestion affecting different areas of the brain." "They are," he adds, "compatible with no single lesion." A case recently recorded of injury in the neck which necessitated ligature of the common carotid artery in the left side is interesting in this connexion.*

Ocular Symptoms.

In his later researches Raynaud paid much attention to the ocular symptoms.

In one case, during the period of asphyxia, the man could see quite well, but as the digits were recovering their normal colour, the sight, especially of the left eye, became dim. Vision was restored at the moment when a new attack of asphyxia supervened. Ophthalmoscopic examination when discolouration of extremities was at a minimum revealed narrowing of the arteries and pulsation of the veins. During the period of cyanosis the arteries did not regain their normal calibre as might have been expected and the venous pulsations persisted.

The second case, a young man aged 22, was admitted for boulimia and polydipsia, and had cyanosis of hands and face; "at the same moment when a paroxysm commenced he experienced a notable obscuration of sight, but when the cyanosis passed off vision was restored." There was narrowing of the arteries during the cyanotic period, with restoration of calibre when reaction set in. The retinal veins were not observed to pulsate.⁴²

Ocular symptoms were also noted in cases of Bland, Morgan,⁴³ Stevenson,⁴⁴ Hutchinson, Simpson, Calmette,⁴⁵ and Solis-Cohen.⁴⁶

Private O.D., whose case has already been referred to, noticed that, in association with the local syncope and local asphyxia, there was increased dimness of vision, particularly in the right eye.

Headache.

Headache is a not infrequent concomitant.

It has already been referred to in cases quoted from Osler and Simpson (where it was left-sided). Wood speaks of a case.⁴⁶ In the case of Private C.D. there were troublesome generalised headaches. Solis-Cohen noticed in one of his cases of acro-asphyxia that there was, associated with visual trouble, intense headache lasting about ten minutes, and in another constant headache for three or four months. In a case of Vulpian there was occipital headache.

Paretic (Hemiplegic) Symptoms.

These have been noted in several cases.

In Raynaud's third case (Thesis) there was apparent paresis of the right arm. In Case III. of the "New Researches" there was hemiplegia of the left side lasting for two hours. In Simpson's case, associated with the aphasia, there was left-sided hemiplegia; a similar condition was recorded by Stockman. Osler noted at one time affection of the right side with aphasia; on the second occasion, of the right hand again with aphasia; thirdly, of the left side but without aphasia; and at the fourth attack right hemiplegia again associated with aphasia. In the case recorded by Weiss there was diminution of motor power.

Raynaud believed that the motor symptoms were due to defect in afferent impulses rather than to muscular weakness. With the hemiplegic symptoms one may associate the condition of intermittent limp, where the patient "after a few steps becomes unable to walk farther owing to intolerable pain in the muscles of the leg."⁴⁷

Erythromelalgia and Raynaud's Disease.

There is at times some confusion in regard to the two conditions. In the two cases with which Weir Mitchell⁴⁸ illustrates and contrasts these conditions there were noticeable nervous symptoms. Although there is dissimilarity in

the symptoms, there may be some relationship in pathological bases. Weir Mitchell at first inclined to the view that erythromelalgia was due to "some form of spinal disorder"; later he considered peripheral neuritis as a possible cause. In Wigglesworth's case of Raynaud's disease there was neuritis in all four limbs; while Pitres and Vaillard held that most of Raynaud's cases of gangrene were caused by peripheral neuritis. Bramann recorded some interesting cases which were possibly related to both Raynaud's disease and to erythromelalgia.⁴⁹ Bramann considered that the symptoms pointed not to vascular but to spinal disease.

Conclusion.

The time has not yet arrived when it is possible to say what is the exact condition in the nervous or vascular systems which gives rise to the varied symptoms of Raynaud's disease, so it is not surprising that various theories have been promulgated. Some of the suggestions are rather of the nature of explaining one symptom by another. For example, when the localised headache in a case of Raynaud's disease is said to be due to "localised meningeal congestions," one is still left to discover the cause of these congestions. Raynaud inclined to the view of the central nervous origin of the symptoms.

The marked symmetry of the lesions (he wrote) ought to suggest that they originate in a discharge either spontaneous or reflex, starting from the cord and radiating thence to the vascular nerves of the extremities.⁵⁰

Barlow sums up as follows:—

The last development of Raynaud's doctrine is that there is a peripheral excitation, most commonly consisting in an impression produced by change of temperature in the cutaneous nerves, and that whilst in a normal state either very low temperature or exposure for a long period are necessary for the production of more or less analogous effects, in these individuals an insignificant difference is sufficient; further, that the peripheral stimulus affects that part of the grey matter of the cord which presides over the vaso-motor innervation and that a great exaggeration of the irritability of that part of the cord must be assumed. Now given the initial slight peripheral stimulus there seems no reason why the central disturbance should not radiate and become manifest in several different regions successively instead of simultaneously.⁵¹

Monro, whose admirable monograph on this condition has rendered all students of it his debtors, thinks that—

"The phenomena of Raynaud's disease must be brought about through the agency of the nervous system." As to the particular part involved, he says: "Accepting then the theory of an increased excitability of the vaso-motor centres in the cerebro-spinal axis, allusion must be made to the situation of the unduly sensitive centres. Raynaud is undoubtedly correct in saying that the part of the cord varies in different cases." The varied distribution and the occasional unilateral character of the symptoms suggest that the disturbance is in the subordinate vaso-motor centres of the cerebro-spinal axis. This is doubtless specially true of cases that originate in consequence of severe exposure. On the other hand, cases that are due to emotion have their source in cortical disturbances, and these will, no doubt, operate through the principal centre in the medulla. If a subordinate centre in a given limited area has once been rendered over-excitable through exposure or otherwise, cortical discharges, such as those connected with emotion, may at any time call forth paroxysmal over-action limited to the over-sensitive region. The theory of a cortical starting-point for the vaso-motor discharge is favoured by the frequent association with such functional disorders of the cortex as insanity, epilepsy, &c.⁵²

Purves Stewart suggests that "profound molecular changes exist in the sympathetic system."⁵³ Lévi and Raymond lay stress upon the emotional factor. They think that the vaso-motor phenomena in Raynaud's disease and in erythromelalgia have their origin in certain emotions which give rise to subconscious fixed ideas. Among their general conclusions are the following:—

1. There is a form of Raynaud's disease which is purely hysterical. It may originate or reappear under the influence of a moral emotion or shock; it may disappear or be improved by hypnotism, but there remains a vaso-motor system easily affected.
2. Acute rheumatism is frequently found in the antecedents of patients, and may determine the localisation of hysterical manifestations.
3. The onset is sudden, the origin emotional. The disease is psychical.
4. The central theory must be accepted—that is, of a neurosis with localisation in the cerebro-spinal centres.⁵⁴

* Madden, F. C., A Case of Marked Temporary Aphasia after Ligature of Common Carotid Artery for Traumatic Aneurysm. Brit. Med. Jour., 1916, I., 585.

Those who incline to the so-called "psychic" agency in the production of such symptoms as are seen in Raynaud's disease would do well to remember that he looked upon those differing symptoms as degrees in one condition. So with the exciting factors, it is a question of the strength of the stimulus; but there is at the same time the response of the organism. Where the instability of the nervous system is so marked that it responds to minimal stimuli the tendency is among certain people to place the results in a category which is marked off from all others. Thereafter it is only a question of personal predilection as to whether they are labelled psychic, spiritualistic, or miraculous; or by those who, admitting in their very phraseology their incompetence to see, designate the facts as hidden or "occult," and then quarrel with anyone who endeavours to illuminate the dark places—and they are many—of their scheme of things.

Emotion as, at least, an exciting factor has been frequently noted.

Noyes records a case, a woman of nervous temperament, in whom attacks were produced by cold and emotion. "Three or four separate attacks have been observed to occur in rapid succession whilst the patient was under examination owing to emotional excitement."⁵⁵ In Stockman's case, "cold, mental excitement, worry and slight traumatism" brought on the attacks.⁵⁶ Colcott Fox notes regarding his case that "the extremities were affected in a second if she was startled by a sudden knock at her door or any unusual occurrence."⁵⁷ Solis-Cohen thinks that in certain individuals there is a congenital want of balance in the circulatory apparatus. "Mental or even physical shock in a subject of congenital vaso-motor ataxia might cause the sudden development of exophthalmic goitre; and an exposure to cold from which a normal individual would quickly react may cause local asphyxia, chilblains, frost-bite, or even gangrene."⁵⁸

In certain cases the cerebral symptoms are apparently secondary to the vaso-motor changes. The etiology of maniac-depressive insanity is obscure, and the possibility of periodic vascular changes cannot be lost sight of. Ritti was strongly of this opinion. He thought it allowable to surmise that a similar condition might be taking place in the brain; that there is spasm of the cerebral capillaries; that the depression may only be the result of cerebral anæmia consecutive to this spasmodic contraction; and that finally the mania is due to re-establishment of the cerebral circulation, which in the phase of reaction may even be exaggerated.⁵⁹ This was the opinion of Luys, who, speaking of this form of insanity, said that the phenomena of alternating depression and excitement succeed one another by imperceptible degrees; this is brought about by "la fatalité des lois de la circulation capillaire." According to him, excitement and depression are only "des variations dynamiques apparentes de l'état d'ischémie ou d'hyperhémie successives par lesquelles passe la trame nerveuse intéressée."⁶⁰ It is probable, however, that the explanation is not quite so simple as this, and other additional factors will doubtless be found to underlie these changes. Nevertheless, the mental symptoms which have been observed in association with Raynaud's disease may eventually help to elucidate the subject of the causation of mental disorder.

In other cases the symptoms of Raynaud's disease have been subsequent to long-continued mental disorder. Edgerley remarks: "While in certain cases disorder of the circulatory system is a cause of insanity, much more often mental disorder produces circulatory disorder."⁶¹ It seems probable from a survey of certain of the cases already mentioned that the spread of disorder in the cerebral cells gradually involved those areas of the nervous system which preside over the vaso-motor and other mechanisms. Cases of general paralysis of the insane frequently provide a dramatic illustration to the gradual spread from one area to another of the nervous system; and one may readily agree with Urquhart when he remarks of the cases described by him that they may be "correlated with cases of general paralysis where intractable hædroses occur in similar symmetrical disposition."

It is not possible, however, to come to any decision on the matter at the present time. The mechanism of cerebral processes has yet to so great an extent to be discovered that the relative value of various factors, physiological or pathological, in bringing about disorder in the human economy cannot be decided. We do know that gross interference with

the cerebral circulation can bring about rapid changes in brain function. Pressure in the common carotid arteries, such as is practised by Japanese wrestlers, speedily produces unconsciousness; and Lauder Brunton gives an example of how the same result used to be brought about before the introduction of chloroform as an anæsthetic by means of raising a person rapidly from the recumbent to the standing position.⁶² In these cases there is produced almost instantaneously the condition to which all insanity tends—abolition of cerebral function. If in such a condition as Raynaud's disease there is a more localised interference with cerebral circulation, it is legitimate to infer that function may be inhibited *pari passu* with the vascular involvement. A further inference would be that cerebral disorder involving those areas whose function is more specifically described as mental may arise from the vaso-motor changes. On the other hand, it is necessary to remember that the cerebral and the vascular changes may be dependent on other factors, such as a toxæmia or a deficiency in glandular secretions. Nothing but a patient study of all the factors involved is likely to lead to that stage at which it will be allowable to pass from hypothesis to explanation; it must suffice us for the most part to endeavour to gather the materials wherewith others shall build.

Bibliography.—1. De l'Asphyxie Locale et de la Gangrène Symétrique des Extrémités (Thèse pour le Doctorat en Médecine), par A. G. Maurice Raynaud (Paris, 1882). 2. New Researches on the Nature and Treatment of Local Asphyxia of the Extremities, by Maurice Raynaud (Selected Monographs—New Sydenham Society), London, 1888, p. 182. 3. Paris Thesis, p. 18. 4. Zambaco: De la Gangrène Spontanée produite par Perturbation Nerveuse (Paris, 1857). 5. Racle: Mémoires sur de Nouveaux Caractères de la Gangrène, &c., Gaz. Méd. de Paris, p. 985, Dec., 1849. (This reference is stated wrongly in Raynaud's Thesis as 1859: an error repeated in Barlow's translation in "Selected Monographs," p. 9.) 6. Paris Thesis, p. 19. 7. Gaz. Méd. de Paris, July, 1849, p. 544. 7a. Raynaud's Disease, by T. K. Monro, Glasgow, 1889, p. 18. 8. Recherches sur les Causes et les Indications Curatives des Maladies Nerveuses, O. Landry (Paris, 1855). 9. Selected Monographs, p. 52. 10. Guy's Hosp. Gaz., 1844, pp. 121, 143. Clin. Jour., 1894, iii., 369-75. 11. Monro: Op. cit., p. 153. 12. Nervous and Mental Diseases, by Church and Peterson, p. 586 (London, 1901). 13. Brit. Med. Jour., 1882, ii., 1155. 14. Case of Raynaud's Disease associated with Convulsions and Hæmoglobinuria, H. M. Thomas, Johns Hopkins Hosp. Reports, 1890-91, ii., 114-18. (Report of case continued by Osler, Amer. Jour. Med. Sc., New Ser., 1896, cxlii., 522.) 15. Cerebral Complications of Raynaud's Disease, Osler, Amer. Jour. of Med. Sc., 1896, New Ser., cxlii., 529. 16. Barlow: Trans. Clin. Soc., 1885, xviii., 311. 16a. Fox, T. Colcott: On Two Cases of Raynaud's Disease, ibid., p. 300. 16b. Lévi, L., and Raymond: Arch. de Neurologie, No. 95; J. of Ment. Sci., xlii., 193 (Jan., 1896). 16c. Solis-Cohen, S.: Vasomotor Ataxia, a Contribution to the Subject of Idiocyneures, Amer. Jour. Med. Sc., 1894, cvii., 132-34. 17. Féré, Ch.: Note sur l'Asphyxie Locale des Extrémités chez les Épileptiques, Nouvelle Iconographie de la Salpêtrière, 1891, iv., 354. 18. Cavaty, G.: Symmetrical Congestive Mottling of the Skin, Trans. Clin. Soc., 1883, xvi., 43. 19. Bland: THE LANCET, 1889, ii., 838. 20. Bernstein: London Med. Record, 1885, xliii., 337. 21. Wilesworth: Peripheral Neuritis in Raynaud's Disease, Trans. Path. Soc. Lond., 1887, xxxviii., 61. 22. Southey: Case of Local Asphyxia, Symmetrical Gangrene, Trans. Clin. Soc., 1888, xvi., 167. 23. Selected Monographs, p. 193. 24. Edgerley, S.: Certain Conditions of the Circulatory System in the Insane, Jour. of Ment. Sc., July, 1896, xlii., 504 et seq. 25. Macpherson, J.: Case of Acute Mania with Symmetrical Gangrene of the Toes, ibid., 1889, xxxv., 61. 26. Esquirol: Des Maladies Mentales, i., 201-03. 27. Ritti, Out: De l'Asphyxie Locale des Extrémités dans la Période de Dépression de la Folie à Double Forme (Ann. Méd. Psychol., Paris, 1882, 6th Series, viii.); Traité Clinique de la Folie à Double Forme, Paris, 1883, p. 106 et seq. 28. Urquhart, A. R.: Two Cases of Raynaud's Disease, Edin. Med. Jour., 1895, xl. (ii.), 806-13. 29. Shaw: Raynaud's Disease, New York Med. Journal, 1886, xlii., 676-79. 30. Targowla: Un Cas d'Asphyxie Locale Symétrique Intermittente des Extrémités chez un Lypémanique, Ann. Méd.-Psychol., 1892, xv., 400-03. 31. Urquhart: Loc. cit. 32. Iscovesco: Asphyxie Locale des Extrémités, C. R. Hebdom. des Séances et Mémoires de la Soc. de Biol., 1894, i., 289. 33. Hutchinson, J.: Arch. of Surgery, 1894, v., 220. 34. Zambaco: Op. cit., Selected Monographs, p. 8. 34a. Barlow: Ibid., p. 193. 35. Ibbotson, E. O. B.: Raynaud's Disease in a Phthisical Dement, Guy's Hosp. Gaz., 1889, xli. (New Ser.), 253. 36. Raynaud: Thesis, p. 97. 36a. Pitres et Vaillard: Arch. de Physiol. Norm. et Path., 1885, p. 106. 36b. Selected Monographs, pp. 195-197. 37. Raynaud: Thesis, pp. 58-66. 38. Weiss: Wiener Klinik, 1882. 39. Monro: Op. cit., p. 156. 39. Osler: Loc. cit., p. 524. 40. Stockman, R.: Edin. Med. Jour., 1903, xiv., 252. 41. Simpson, J. C.: Remarks on Raynaud's Disease, with cases, Edin. Med. Jour., 1892-93, xxxviii., 1030. 42. Monro: Op. cit., p. 159-60. 43. Raynaud: New Researches, &c., Selected Monographs, pp. 158-67. 43. Monro: Op. cit., p. 160. 44. Stevenson, L. E.: Case of Raynaud's Disease, THE LANCET, 1890, ii., 917. 45. Calmette: Recueil de Mémoires de Médecine, 1877, xxviii., 24. 46. Monro: p. 151. 46. Wood, H. C.: Trans. Coll. of Physicians, Philadelphia, 1892, xiv., 168. 47. Stewart, Purves: The Diagnosis of Nervous Diseases, 1906, p. 156. 48. Weir Mitchell, S.: Clinical Lessons on Nervous Diseases, 1897, 180-84. 49. Monro: Op. cit., p. 157. 50. Selected Monographs, p. 155. 51. Barlow: Trans. Clin. Soc., xvi., 186 (1883). 52. Monro: Op. cit., pp. 183, 196. 53. Stewart: Op. cit., p. 43 (note). 54. Lévi and Raymond: Arch. de Neurol., No. 95; J. of Ment. Science, xliii., p. 193 (Jan., 1896). 55. Noyes, A. W. F.: Raynaud's Disease, Austral. Med. Jour., 1893, xv., 265-69. 56. Stockman: Loc. cit. 57. Fox: Loc. cit. 58. Solis-Cohen: Amer. Jour. of Med. Sc., cvii., 144 (1894). 59. Ritti: Ann. Méd. Psychol., 6th Series, viii., 36-49 (Paris, 1882). 60. Traité Clinique et Pratique des Maladies Mentales, p. 515. 61. Edgerley: Loc. cit. 62. Brunton: The Action of Medicines, p. 172.

A NOTE ON THE TREATMENT OF LAMBLIA INFECTIONS.

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MANY drugs have been tried in the treatment of *Lambli* intestinalis infections, and cures have from time to time been reported. How far these may be looked upon as real is, however, doubtful, because no exact details have usually been given as to the number of examinations of the faeces made after treatment, nor as to the length of time during which these examinations have been conducted. It is a fact familiar to all who have examined the faeces of persons infected with lamblia that the parasites are not always discoverable in the stools. A case which is "positive" one day may be "negative" the next, no cysts or free flagellates being found after the most careful search. It is therefore of the greatest importance to ascertain the frequency of the occurrence of such "negative" days in untreated cases if any conclusions are to be drawn from findings in the faeces as to the effects produced by any particular treatment. When after the administration of some drug no lamblia can be found for a few days, it is clearly inadmissible to attribute the absence of parasites to the action of the drug if a similar temporary disappearance may be observed without any treatment whatsoever.

In the belief that a few cases thoroughly studied are more informative than a large number studied imperfectly, we offer the following detailed observations which we have made upon a single case infected with *Lambli* intestinalis. The case studied is a perfectly healthy man who has been infected with lamblia for some years without suffering the slightest ailment which could be attributed to the flagellate. Before any treatment was attempted the stools of this person were subjected to daily examinations by one of us (C. D.) for a period of 100 consecutive days in order to ascertain the frequency of the occurrence of negative examinations in normal circumstances. The number of cysts passed in the faeces on different days varied greatly, and on many days the most careful search failed to reveal even a single cyst. As a general rule no stool was pronounced "negative" until two cover-glass preparations (7/8 in. sq.) had been systematically searched. On several occasions, however, more than two preparations (up to 11) were examined. The results of this series of examinations, recorded simply as positive and negative without reference to the number of cysts present on positive days, are given in the following table:—

| | | | | | | | | | | | | | | | | | | | | |
|------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| Days ... | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Examinations ... | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Days ... | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| Examinations ... | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Days ... | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| Examinations ... | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Days ... | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| Examinations ... | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Days ... | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
| Examinations ... | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

If the above table be examined it will be seen that the distribution of positive and negative findings is extremely capricious. No definite periodicity in the output of cysts is observable. The most noteworthy feature in the record, however, is the large proportion of negative findings—altogether 62 negative examinations and only 38 positive having been made. It will also be noted that fairly long sequences of negative examinations occurred. The longest was from the fifty-first to the sixtieth day (10 days), whilst somewhat shorter periods, from the eighty-seventh to the ninety-fifth day (9 days) and from the eighteenth to the twenty-fourth (7 days) were also found. It is thus clear that with this case any number of consecutive daily negative

examinations between 1 and 10 would be devoid of significance as evidence of removal of the flagellates in any treatment which might be attempted. After this point had been determined we began a series of trial experiments with drugs for which success has been claimed. Examinations of the stools were made daily throughout.

Woodcock and Penfold¹ record a series of lamblia cases treated with various drugs, and claim that they completely cured one of them by the administration of beta-naphthol together with bismuth salicylate. One of us (G. C. L.) has already criticised² these results and pointed out that further examinations were essential, especially after the administration of saline purges. These drugs were the first tried on the case here described.

Bismuth salicylate gr. 20 and beta-naphthol gr. 15, made up in cachets, were given three times a day after food, the administration being continued for six days. During treatment the cysts disappeared from the stools. None could be found for nine days (three days during and six after treatment). On the seventh day, however, after treatment they were again found in the stool and persisted in considerable numbers for the next week. When the 9 days negative period which occurred at the time of treatment is compared with the 7 days, 9 days, and 10 days periods of negative examinations which occurred previously without treatment, it appears probable that it is without significance as an indication that any effect was produced by the drugs administered.

As this treatment was therefore quite unsuccessful a second trial was begun after eight consecutive daily positive examinations had been registered. The second treatment was with methylene-blue, as recommended for flagellate infections generally by Castellani.³ Three grains of the drug were administered thrice daily after food. The treatment was continued for two days, after which it had to be abandoned owing to the appearance of toxic symptoms. These symptoms were as follows. After three doses there was a gradually increasing sensation of discomfort in the abdomen, eventually localised as a definite bladder irritation. The patient had to rise twice during the first night to pass water, and in doing so experienced a smarting sensation in the urethra. On the second day, however, the drug was again taken in full doses, micturition then becoming painful and the vesical irritation more pronounced. Frequent passing of urine temporarily relieved the abdominal discomfort. During the second night the symptoms became so unpleasantly accentuated that the treatment was discontinued. The total amount of the drug taken was 18 grains in the two days. On the cessation of treatment the symptoms rapidly disappeared. Dr. A. J. Ewins kindly tested the sample of methylene-blue employed for the possible presence of zinc, but with negative result. It is thus clear that this dye, even when quite free from zinc, may give rise to toxic symptoms. A similar result was obtained by one of us (G. C. L.) in a case previously described,⁴ and Dr. N. Barlow in America has recently recorded comparable experiences.⁵ It may be concluded, therefore, that methylene-blue in such doses may be dangerous, and should be employed with caution. The drug appears to have had no effect whatsoever on the lamblia. The cysts were equally numerous in the faeces before, during, and for 13 days after treatment. If it had killed the parasites one would have expected to find a certain number of dead and stained organisms in the faeces at the time of treatment; although these were searched for with great care none were seen.

The third treatment tried was with turpentine, well spoken of by French authors. Ten minims in gelatin capsules were administered three times a day for five days, this being followed by guaiacol carbonate 5 gr. thrice daily for three days. Every day during treatment and for 19 consecutive days afterwards the stools were examined and large numbers of cysts found on every occasion. It may be concluded therefore that these two drugs were wholly ineffectual in removing the lamblia.

Woodcock and Penfold believe that they were able to cure two cases of lamblia infection by this method of treatment, but their belief appears to us to rest upon a very slight

¹ Brit. Med. Jour., March 18th, 1916.² Ibid., March 25th, 1916.³ Ibid., Nov. 27th, 1915.⁴ Jour. Trop. Med. and Hyg., Feb. 1st, 1916.⁵ New Orleans Med. and Surg. Journ., October, 1916, lxi., No. 4.

foundation. Their cases were each examined only twice after treatment. One was negative on both occasions, the other once positive and once negative. We believe that so few negative examinations are without significance, and therefore do not warrant the conclusion drawn by the authors.

We have not as yet tried any other method of treatment upon the case here described, for the reason that none would appear to hold out any hope of success. All the five drugs here employed (bismuth salicylate, beta-naphthol, methylene blue, turpentine, and guaiacol carbonate) appear to be without action upon lamblia. We have, one or both of us, examined other cases treated with various other drugs, all of which have been equally useless, and therefore appear unworthy of further trial. These include emetine hydrochloride (hypodermically), emetine bismuth iodide, bismuth subnitrate, thymol, salol, kerol, cyllin, and liquid paraffin. It appears to us probable that no method of treatment has yet been found which will get rid of a lamblia infection. The only effect which could possibly be ascribed to the treatment in the present case is one which is hardly desirable. During and after the treated period the number of cysts in the faeces increased enormously; for, whereas during the untreated period lamblia cysts could be found only 38 times in 100 examinations, and then usually in small numbers only, yet during and after treatment for a period of over 50 days cysts were present every day in large quantities.

Note on the Blood in Lamblia Infections.

So far as we are aware, no exact blood counts and blood examinations made in lamblia infections have as yet been published. In order that these may be of any value mixed infections must, of course, be excluded. In this respect we have been fortunate, as our case is not infected with any other protozoan, and he has never suffered from dysentery, malaria, persistent diarrhoea, bowel troubles, or debility, and is at the present moment in perfect health.

A total enumeration of the corpuscles and a differential count of the leucocytes show that both of these do not vary in any respect from the normal. The following are the figures:—

| | |
|------------------|---------------|
| Red corpuscles | 4,860,000 |
| White corpuscles | 7,200 |
| Hæmoglobin | 100 per cent. |

Differential Count.

| | No. counted. | Per cent. | No. per c.mm. |
|-------------------|--------------|-----------|---------------|
| Polymorphonuclear | 658 | 65.8 | 4737.6 |
| Large mononuclear | 27 | 2.7 | 194.4 |
| Lymphocytes | 281 | 28.1 | 2023.2 |
| Eosinophile | 26 | 2.6 | 187.2 |
| Transitional | 5 | 0.5 | 36.0 |
| Mast cells | 3 | 0.3 | 21.6 |
| | 1000 | 100.0 | 7200.0 |

The red corpuscles were normal in size and shape. One might have expected some increase in the number of large mononuclear leucocytes, such as occurs in other protozoal infections (malaria, trypanosomiasis). The statement has, indeed, been made that in lamblia infections there is an increase in the number of lymphocytes and large mononuclears. The present case affords no confirmation of this view. Moreover, it seems probable that the presence of protozoa in the intestine gives rise to no recognisable change in the cellular constitution of the blood. The present case confirms this supposition, as does an earlier observation of one of us (G. C. L.) on a case of pure infection with *Entameba histolytica*.⁶ A blood count, therefore, would seem to be of no value as a means of determining whether a person is, or is not, infected with intestinal protozoa.

We do not, of course, wish to draw any far-reaching conclusions from the single case here described; but as it presents certain features of interest and supplies definite information upon certain points, we think the few foregoing observations worthy of record.

⁶ Jour. Trop. Med. and Hyg., Feb. 1st, 1916.

LIVINGSTONE COLLEGE.—This institution during the past 22 years has trained a succession of students for medical missionary work. It is now a hospital for wounded soldiers, and the last report shows that during the past 14 months 850 patients have been treated, with an average attendance of nearly 23 days each. Dr. L. E. Wigram, the principal of the College, is now the honorary resident medical officer.

THE FULMINATING TYPE OF CEREBRO-SPINAL FEVER: PATHOLOGY AND CAUSE OF DEATH.

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Cases belonging to this type form one of the most distressing features of this disease. An apparently healthy person is suddenly attacked and dies within 48 hours from the onset of his illness. In our series of cases of cerebro-spinal fever during the epidemic of 1914-16 we have noted a considerable number which may be classified under this heading. We have notes including post-mortem records of 10 or 12 of these cases, and in addition clinical notes of several more which have belonged to this type. All terminate fatally, and pathologically differ from the ordinary type of this disease in one essential feature, and it is principally to this that we wish to draw attention.

1. It has been recognised for some time that cases of intense meningococcal bacteriæmia without any meningeal involvement may occur. While these cases are rare it is not so uncommon to find others very similar in which the meningeal infection is very slight, and which apparently succumb to the general infection before the lesions of the meninges have time to develop fully. Our notes on one of these cases will sufficiently describe this class.

The patient, aged 21, suddenly became ill in the evening of April 9th, 1916, with headache, shivering, and vomiting. On admission to hospital on the 10th he looked ill. The face was pale and slightly cyanosed. He complained of slight headache and pain in ankles. Slight resistance on antero-posterior flexion of neck. Kernig's sign just present. Knee-jerks and abdominal reflex absent. Tache cérébrale present. Petechial rash on trunk and limbs, with many large purpuric blotches. Cardiac dullness increased to right side of sternum. Blood examination: Total leucocytes, 31,000. Differential count: Polymorphs, 85 per cent.; lymphocytes, 5 per cent.; mononuclears, 7 per cent.; myelocytes, 3 per cent. Lumbar puncture: 50 c.c. perfectly clear fluid under pressure. No increase of cellular content; protein content not increased; no fibrin; reduced Fehling's solution. 2 c.c. spread on plate gave four colonies of meningococci; 1 c.c. blood in broth gave profuse growth. Patient remained comfortable for some hours and did not complain of pain. The pulse became more and more feeble, until it could not be felt at wrist. Died suddenly. Remained conscious to the end, and for some time before death no heart sounds could be heard and there was intense cyanosis.

Post-mortem.—Meninges congested. Slight amount of exudate about optic chiasma and on under surface of cerebellum. Faintly turbid fluid in lateral ventricle. Extensive hæmorrhage into substance of adrenal gland. Petechial hæmorrhage under pericardium and into intestinal mucous membrane, &c.

2. After a similar abrupt onset the patient becomes almost immediately unconscious.

At first the signs of involvement of the meninges are present, but later they may be replaced by complete muscular flaccidity. A profuse purpuric rash appears, the breathing becomes stertorous, and the patient intensely cyanosed. Cardiac dilatation commences, the heart becomes more and more feeble, and finally ceases to beat. The cerebro-spinal fluid is extremely turbid and is under considerable pressure. It contains many polymorphs and abundant meningococci, both intra- and extra-cellular. Fibrin is present, and it no longer reduces Fehling's solution. In most cases the meningococcus can be cultivated from the blood.

Blood examination.—Polymorphs, 74 per cent.; mononuclears, 8 per cent.; lymphocytes, 18 per cent.

| | | | | | |
|-------------------|-----|-----|------|-----|----|
| | I. | II. | III. | IV. | V. |
| Polynuclear count | 56% | 27% | 14% | 3% | 0% |
| | 83% | | | | |
| | 17% | | | | |

This shows the extent of the general infection.

Post-mortem.—Extensive purulent infiltration of the cerebral and spinal meninges. Increased quantity of cerebro-spinal fluid, which is very turbid. Hæmorrhages into the adrenal glands. Petechial hæmorrhages into other organs as described in the first class may be present.

These two classes are not sharply divided and intermediate cases are met with.

Pathology.—Post-mortem examination also reveals two types of cases. In one type the brain and cord are merely congested. The congestion may not be marked, there may be very little fluid in the lateral ventricles or cisternæ, but this fluid is slightly turbid. The presence of this small amount, not more than normal, of turbid fluid is found chiefly in the lateral ventricles and the cisterna chiasmatis, and may be the only macroscopic sign of involvement of the central nervous system. In the other type there is extensive involvement of the pia-arachnoid, giving the well-known appearances.

There are, however, two conditions which have been invariably present in our series of cases of malignant cerebro-spinal fever—viz., a purpuric rash and a hæmorrhagic state of the adrenals. The rash is hæmorrhagic and varies in size from petechial spots to large areas of several square inches. There may be petechial hæmorrhages on the epicardium and on the serous surface of the intestines. The adrenals are found to be dark red in colour, enlarged, and friable. Their weight may be as much as 24 or 28 grammes. Microscopically, the medullary substance is replaced by effused blood, and very few chromaffin cells are to be seen. The re-icular, fascicular, and glomerular zones show distended capillaries and red blood corpuscles effused between the cortical cells. The cells are distorted by pressure, and many have lost their outline. The refractile granules are much diminished in number.

The occurrence of hæmorrhage into the adrenal glands has been previously noted, but sufficient importance has not been attached to its frequency. The destruction, by hæmorrhage, of the medulla of the adrenals would account for the curious clinical phenomena—diminishing, and later absence of, blood pressure and the muscular flaccidity. The hypotension is, of course, directly due to the loss of epinephrin, the normal stimulus to the "myoneural function" of the sympathetic autonomic system. The muscular flaccidity, with loss of neck stiffness, Kernig's and Brudzinski's signs, and knee-jerk, is accounted for in the same manner, and would tend to confirm the view that epinephrin not only acts upon the plain muscle innervated by the sympathetic autonomic system, but also has a stimulating effect upon the tone of the skeletal muscles.

The presence of acute hæmorrhagic adrenalitis, although not confined to cerebro-spinal fever, is so common in that disease as to suggest a selective action by the meningococcus on the chromaffin cells, and when it is remembered that the medulla is developed from the same neuroblastic masses as the sympathetic system the theory has further grounds for belief. But we have no proof that the hæmorrhage and cell destruction commence in the medulla. The cortical cells and refractile granules share the same fate as the medullary cells, and it is quite possible that the cortex is the starting point. The lipoids of the cortex, thought to be specially related to the formation of myelin, may have initiated the pathological condition by their sudden withdrawal from the cortical cells, in response to the myelin degeneration taking place in the central nervous system.

Treatment.—The utilisation of the knowledge of this tendency to hæmorrhagic adrenalitis is important. The acute case with rapidly falling blood pressure should have adrenalin injected intravenously in such doses as will keep the arterioles sufficiently contracted to maintain the circulation, in the hope that either the chromaffin cells of the other parts of the chromaffin system will increase and take over the function of the adrenals or that the medullary cells will recover.

REVISION OF PANEL DOCTORS' LISTS.—In the House of Commons recently Mr. Yeo, M.P., asked a question as to the remuneration of medical men who are only informed that an insured patient is no longer entitled to medical benefits a long time after he has become so. Mr. Charles Roberts, in a written answer, replied by stating that such matters were dealt with in a pamphlet recently published for the purpose of correcting misapprehensions, which pamphlet he was sending to the honourable Member. The pamphlet referred to was clearly Memorandum 229/I.C., which explains the system of remunerating medical practitioners by a system of calculation and not by paying a precise amount for each insured person, according to the exact time during which he is entitled to treatment by a particular doctor.

THE IMPORTANCE OF GETTING A PREGNANT WOMAN UNDER MEDICAL SUPERVISION,

AND AFFORDING HER THE NECESSARY TREATMENT.¹

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SOON after our Council asked me to read a short paper to this section on the subject under discussion, I read an important monograph on "The Care of the Pregnant Woman," by Dr. Archibald Donald, of Manchester.² I agree with almost everything in that paper except his three summing-up conclusions, which seem to me to oppose some of his arguments.

Surely the fact that still-births are often due to "accidents of childbirth," as the Registrar-General calls them, is no argument against the supervision of pregnant women, for such accidents are often due to undiscovered pelvic abnormalities. Nor do I see that even if "greatly increased supervision" would only result in "comparatively few" foetal lives being saved, it is any argument against such increase of supervision.

Dr. Donald's first conclusion that such increase of supervision would cause unnecessary trouble because women would come voluntarily for help in cases where danger threatens, does not seem borne out by one's own experience or by Dr. Donald's own statements. Many complications are subjectively unsuspected. The expression "medical supervision" does not necessarily mean continuous or frequent interviews. Primarily it means one interview and a preliminary examination of urine. Subsequent interviews and urine tests take place as the doctor thinks desirable, or when the patient notices some sign or symptom which disturbs her.

If Dr. Donald is right that increased supervision is unnecessary, because its results would be comparatively small, I would ask how it is that emergency Cæsarean operations for unrecognized pelvic contractions continue to be sent to our hospitals. Some of these cases, owing to previous attempts at delivery, are already septic and their mortality is high. How is it that among the poorer classes emergency admissions to our hospitals of cases of eclampsia are still so numerous? Why should 3 per cent. of still-births be now notified under the compulsory extension of the Notification of Births Act? Why especially should there be so many macerated still-births? It is I think agreed that the large majority of macerated foetuses are due to either syphilis or maternal toxæmia.

Sir Francis Champneys, who is of course in favour of medical supervision, in a letter on "Health Visitors and Birth Inquiry Cards,"³ says: "It is a mistake to suppose that ante-natal care has only been discovered in the twentieth century. All careful doctors have practised it for a very long time and all careful midwives have done the same." He adds "that the Rules of the Central Midwives Board have recognised it from the beginning." Dr. J. W. Ballantyne's work on ante-natal pathology and ante-natal hygiene really was a "discovery" from the foetal point of view, and he began his prematernity work in the Edinburgh Royal Infirmary in November, 1901. In England there were no infant-welfare or ante-natal clinics before 1906. Apart from hospital routine, no systematic ante-natal work was started till 1911, when it was commenced in Birmingham and Leeds, and that was mainly home-visiting of expectant mothers.

There are, of course, many careful doctors, but even careful doctors do not always extend their care, unasked, to pregnant women or to unborn babes. Midwives, although not paid for visiting their patients during pregnancy, are encouraged by the new (1916) Central Midwives Board Rules to extend their ante-natal care to the "unborn child," for in the subjects for examination for their certificate there is now included the "hygiene of pregnancy and its diseases, complications, including abortion, both in relation (a) to the

¹ Abstract of paper read before the Obstetrical Section of the Royal Society of Medicine on Nov. 2nd, 1916.

² Brit. Med. Jour., 1916, ii., 33.

³ Ibid., 1916, ii., 438.

mother and (b) the unborn child." Previously it was worded: "Pregnancy and its principal complications, including abortion." This extension of interest to the unborn child will greatly increase the usefulness of the midwife. It is a possible danger that if midwives are to be trained in, and examined on, the diseases and complications of pregnancy it may be difficult to prevent them treating such conditions, at all events for a time, instead of at once sending for medical assistance as the Rules require.

In an address on Antenatal Hygiene early in 1914, I pointed out that the death-rate of infants during their mothers' pregnancies was as great as, or probably greater than, the death-rate amongst their survivors in the first year of life. This was based on the notification of 3 still-births per 100 births, and on the estimate made by many experts that abortions and miscarriages are four times as numerous as still-births; if so, it means about 150,000 deaths in utero or during child-birth in England and Wales every year. How many of these would be saved if we could always detect syphilis and toxæmia in early pregnancy!

The fact is that the life of the infant and of the unborn babe, like silver in the time of Solomon, was of small account with a high birth-rate and a prolonged peace. Now, with a small birth-rate, and when mothers are mourning the loss of "only sons," and have an added and often expressed sorrow that they might have had others, the life of the child is of enormous importance, and steps to ensure maternal and infant welfare are being initiated at conception instead of being delayed till child-birth, to the great advantage of both the mother and the child.

As a result of increased interest in the unborn child, a large number of ante-natal clinics and maternity centres have been instituted with the primary object of trying to save the child, but also indirectly benefiting the mother. Where the clinic is initiated by "Associations for Preventing Infantile Mortality," such as that presided over by Sir Thomas Barlow, or for encouraging "Infant Welfare," or as part of the organisation of hospitals for children, &c., it is natural that the nomenclature should be from the child's point of view rather than that of the mother, and the phrase preferred at such centres is ante-natal rather than ante-partum. There are now 750 such maternity centres in Great Britain and Ireland.

Till a few years ago women who came to be registered for their confinement in the indoor or extern departments of many general hospitals had their names and addresses taken down by the obstetric house physician, who may have had no previous experience of the diseases of pregnancy, and often had very little spare time. It was optional for him to examine, or omit to examine, the patient, or to test her urine. No students used to attend this registration, for rarely was any clinical knowledge to be gained. Now opportunity is taken to utilise the registration of expectant mothers by making it, and sometimes calling it, an ante-partum or ante-natal clinic, greatly to the advantage of patients and students, and the department is usually in charge of the obstetric registrar or tutor, or even of the assistant obstetric physician or surgeon. Some arrangement is also made for pre-maternity wards or for beds in the maternity ward for pregnancy complications.

Notwithstanding the conclusions which Dr. Donald drew in his paper and which, I fear, may tend to check enthusiasm in ante-partum and ante-natal hygiene and care, I feel sure that he really does not disagree with me, for a most interesting account is given by Dr. W. Fletcher Shaw⁴ on "Ante-partum Clinics" as conducted at St. Mary's Hospital, Manchester, where Dr. Donald has done such admirable and well-recognised work. Every pregnant woman going there to be registered for indoor or outdoor parturition is seen by the resident obstetrical officer, who has always had previous obstetrical experience. Every primigravida and every woman with a history of a previous difficult confinement is examined by him. This is ideal supervision, and so also is the routine examination of urine as insisted upon by Dr. Donald.

But Dr. Shaw adds: "It is not sufficient to have well-equipped and well-staffed maternity hospitals, the general practitioner must have practical training in the whole department of midwifery." This is the right attitude to adopt as regards supervision. The doctor must be able

efficiently to supervise his pregnant patients. Routine urine tests should always be made, and further tests made if there is albuminuria to decide upon its toxic origin. In addition to the necessity of ascertaining whether the pelvis is contracted, whether there are clinical evidences of toxæmia, or whether the woman is syphilitic, I will merely allude to such maternal conditions as malnutrition, Bright's disease, diabetes, heart disease, and tuberculosis, any of which should, if present, be discovered and treated. Early this year I saw a lady who was only six weeks pregnant and thought herself well, but was already showing evidences of cardiac insufficiency. Sir James Mackenzie's advice (and he is not a pessimist) was "immediate operation for the removal of the ovum." Such cases, rare though they be, cannot be seen too early. Plumbism perhaps due to diachylon, asthma, Graves's disease, malaria, chronic colitis, or chronic bacilluria may also be discovered and the mother's health safeguarded. The acute specific fevers, as well as acute pneumonia or bronchitis, or gonorrhœa acquired during pregnancy, or acute coli pyelonephritis, need not be here considered, for such conditions would necessarily lead to the patient coming under medical care.

Mechanical abnormalities such as retroversion of the gravid uterus could be detected before symptoms have appeared, and sequelæ such as impaction of the fundus uteri, abortion, retention of urine, cystitis, or sepsis prevented. In addition to pelvic contractions and deformities, potentially obstructing fibromyomata or ovarian tumours, or cicatricial stenosis of the cervix or vagina, may each be unsuspected by the patient, but are easily discoverable during early pregnancy, and may be either treated at once or left to be dealt with at a later date as may be indicated. Ante-partum hæmorrhage need not be considered, for the woman would in most cases seek medical advice, so that ectopic gestation, mucous polypi or cancer of the cervix, placental detachments, &c., would become known. Similarly hæmorrhage due to hydatidiform degeneration of the chorion or to the presence of a carneous or blood mole would lead to a doctor being consulted.

In the later months foetal malpositions, malformations, such as hydrocephalus, or relatively large children, all of which may be causes of "accidents of child-birth," may be sometimes discovered. The recognition, for instance, of a transverse lie early in labour, or during late pregnancy, followed by appropriate treatment, would minimise risk to mother and child.

Prematernity beds.—Every maternity centre and ante-natal clinic should be linked up with hospitals where so-called "prematernity beds or wards" are available. Observation by experts and medical or surgical treatment can then be carried out.

Notification of pregnancy.—If all midwives could be encouraged to take their patients to a maternity or ante-natal clinic the patients would by such a visit voluntarily and automatically notify their pregnancy to the doctor in charge, without any publicity whatever. This is a very different thing from *compulsory notification*. Any attempt to enforce compulsory notification to the health officer or his representative would in many cases result in the woman putting off notification till very late, or perhaps not till her confinement, and would arrest the good progress now being made in securing medical supervision.

Research.—Research work in ante-natal pathology must be associated with medical supervision of pregnant women, especially as regards syphilis and toxic albuminuria and their effect upon mother and foetus. A pathological and chemical laboratory should be provided within easy access of all groups of maternity centres and clinics in large towns. This could either be in a general or a lying-in hospital or be one of the laboratories recommended in the report of the Royal Commission on Venereal Diseases. Every foetus, and especially every macerated foetus, whether born before or after viability, and every ovum, however early, expelled from a woman who has had other abortions or still-births should be sent to a pathological expert for examination, and search made for the *Spirochæta pallida* or other cause of death. In the new (1916) Rules of the Central Midwives Board midwives are instructed to keep the body of every still-born child till the doctor has seen it.

There seems a tendency for some pathologists to consider that syphilis in the parents only causes foetal disease or death in the later months. This appears to be founded upon

⁴ Brit. Med. Jour., Oct. 14th, 1916.

the fact that the *Spirochæta pallida* is not found in the earlier fetuses, and yet syphilitic women often have alternating abortions and still-births. Dr. F. W. Mott showed this conclusively in his interesting epidiascope demonstration at the discussion at this section in April, 1914, following an address by myself on "The Need for Research in Antenatal Pathology," and those who doubt that syphilis causes abortion should read his remarks in our Proceedings for that month.¹ If in these cases still-births are proved to be syphilitic, surely it is logical to assume that the abortions in the same women are due to the same cause, even though search for the spirochæta is negative. Those who hold these new views admit that toxic albuminuria in pregnancy may cause foetal death during both early and later pregnancy, and that in the later months the foetus may become macerated. The evidence in the case of the mother, known to have syphilis by a positive Wassermann reaction, does not seem to me to be different from that in the case of the woman who is known to be suffering from a toxic albuminuria. In both cases the mother has a disease which may destroy foetal life at all stages. I cannot help thinking that the existence of spores in the life-history of the *Spirochæta pallida*, as described by McDonagh, may be an explanation of the failure to find spirochætes in abortions, the spirochætes being destroyed by the ferments of the chorionic villi, whilst the spores escape.

Whether, therefore, the question of medical supervision during pregnancy be considered from the points of view of the welfare of the mother and unborn child, or as an educational stimulus to the nation, or from the standpoint of the increase of pathological, chemical, and therapeutical knowledge for the profession, there can surely be no real difference of opinion that every pregnant woman should be seen by a doctor, and then have such supervision as her condition requires.

Manchester-square W.

TWO FATAL CASES OF METASTATIC GAS GANGRENE.

By KENNETH TAYLOR, M.A., M.D.,

DIRECTOR OF LABORATORIES, ROBERT WALTON GOSLET RESEARCH FUND, HÔPITAL COMPLEMENTAIRE V.R. 76, FRANCE.

THE following two cases are reported because of their singularity and because of the light which they may throw upon one of the methods of extension of infection by the *B. aerogenes capsulatus*.

CASE 1.—A private, wounded 10 days previously by shell fragment. First dressing applied within a few hours. Admitted to the hospital with diagnosis of a perforating wound of right arm with fracture of the humerus at its lower third and gaseous gangrene of the arm. Examination of the arm showed marked swelling and tension of the muscle fascia; purplish discolouration of the skin reaching from the shoulder to the lower third of forearm; several blebs over triceps muscle; diffuse subcutaneous emphysema extending from the shoulder well on to the forearm. Radial pulse could not be felt. Operation: open-flap amputation just below the shoulder-joint was performed immediately. Tissues at site of amputation showed gas in subcutaneous tissue and muscle. The muscles about the shoulder-joint were also incised and found to be gaseous, pale brick-red in colour, and dry. As far as possible the gangrenous portions of these muscles were excised. Patient was placed in a sitting position. His general condition improved steadily for five days, when, although the infection about the shoulder-joint appeared to be arrested, he again showed signs of acute intoxication, and died on the sixth day after operation. Blood taken from the median basilic vein of left arm three days before death was sterile. Necropsy performed five hours after death showed no evidence of further extension of the infection on to the trunk. Examination of the limbs showed gaseous gangrene of the right gluteus maximus and medius, where sustained pressure had resulted from the sitting posture. The infection had extended to the adductor muscles of the right thigh. Cultures of heart's blood, muscles of the shoulder and of right gluteal muscles showed pure culture of the *B. aerogenes capsulatus*.

CASE 2.—A private, wounded six days previously by shell fragment. Was dressed one hour after injury, transported by motor to field ambulance, where a piece of shell was removed from the right gluteal muscles. He was evacuated

the next day by train. When admitted to the hospital patient was lying on his left side and stated that he had been forced to maintain this posture because of the position of the wound in the right buttock. On the right buttock was a large excavating wound which had evidently been incised. Cultures from this wound showed the *B. aerogenes capsulatus*. The following day gaseous distension of the right gluteus maximus was evident. An operation was performed, the gluteal muscles being widely opened. The following day, however, his general condition was worse, and further examination showed gaseous distension of the left thigh—upon which he had been resting continuously. There was no subcutaneous crepitation, and no blebs or discolouration of the skin, but tension of the fascia sheaths was evident and the thigh was tympanitic to percussion. An operation was performed: the right gluteal muscles were again examined and the exposed necrotic portions excised. The infection appeared to be limited to the region of the wound. A longitudinal incision was made through the fascia in the outer surface of the left thigh from the level of the great trochanter to 5 cm. above the knee-joint. Through this the vastus externus muscle immediately bulged; it was incised but appeared contractile and normal. A similar incision was made on the inner surface of the left thigh, when the muscles exposed bulged out through the wound. The muscles seemed to be in healthy condition. The patient, however, became more and more toxic, and died 24 hours later—eight days after injury and two days after admission to the hospital. Necropsy showed no extension of the gangrenous process in the right gluteal muscles, the infection being limited to the tissues exposed in the wound. There was no communication between the wound of the right gluteal muscles and the tissues involved in the left thigh or left gluteal region. Careful examination of the subcutaneous tissue and muscles intervening showed no evidence whatever of infection. Subcutaneous crepitation was noted over the left thigh and leg nearly to the ankle-joint and upwards over the anterior surface of the left half of the abdomen well above the crest of the ilium. The left half of the scrotum was distended with gas. There was no discolouration of the skin and no blebs. Examination of the left thigh showed extensive necrosis of large muscle masses, chiefly limited to the three glutei, the rotator muscles of the thigh, and the adductors. The other muscles appeared to be intact. Cultures from the operative wounds of left thigh and gaseous subcutaneous tissue above the crest of the left ilium showed the *Bacillus aerogenes capsulatus*. Cultures of the gaseous subcutaneous tissue over the gastrocnemius muscle on the left leg remained sterile. Culture of the heart's blood was sterile.

These two cases are similar in the following respects: In both the focus of the infection and the gangrene which was the final cause of death were of metastatic origin—e.g., there was certainly no direct extension from the wound to the area of muscle destruction. In the first, blood culture three days before death proved negative; in the second, culture from the heart's blood at necropsy was likewise negative.¹ In both the terminal gangrene occurred over a week after injury. In both the site of the metastatic gangrene was that upon which continuous pressure² was exerted by the posture which the patient was obliged to maintain. Apparently direct extension through subcutaneous tissue, muscles, and muscle fascia could be excluded. Extension by superficial or deep lymphatics seems to have been unlikely. The results of the blood cultures gave no proof of any true, continuous bacteriæmia, but the blood stream appeared to be the most probable mode of extension.

The conclusions to be drawn from the two cases appear, therefore, to be:—

1. That blood invasion may occur during the life of the patient but is probably only of short duration.
2. That the vitality of a muscle mass may be so lowered by continuous subjection to pressure and the resultant interference with its circulation that it may become a site for the fixation and activity of the bacilli following the temporary invasion of the blood.
3. That it is advisable, in the case of a patient who has a wound infected by the gas bacillus, to make a careful examination of the entire body and not limit the attention to the region of the wound.
4. That it is dangerous to allow a patient suffering from a wound infected by the gas bacillus to maintain a fixed position in bed.

¹ This is not unusual in necropsies performed soon after death. Other cases are reported in the following paper: "Observations on the Pathology and Bacteriology of Gas Gangrene," Journal of Pathology and Bacteriology, 1916, xx., 384.

² "Factors Responsible for Gaseous Gangrene," THE LANCET, Jan. 15th, 1916.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

Anaerobic Wound Infection.

A MEETING of this section was held on Dec. 14th, Mr. W. MCADAM ECCLES being in the chair.

Miss M. H. F. IVENS, M.S., Médecin-chef Hôpital Auxiliaire 301, read a paper entitled "A Clinical Study of Anaerobic Wound Infection, with an Analysis of 107 Cases of Gas Gangrene." The paper was based on 464 cases of gas infection, of which 107 were clinically gas gangrene, observed during two years' work in a French military hospital of 400 beds receiving its wounded directly from the Somme, through an evacuating station, where the most urgent cases were taken from the train. Difficulties of minute investigation were increased by the large numbers coming in together after an attack. Attention was drawn to the importance of complete bacteriological study and the careful examination of the X ray plates which, in the majority of cases, showed the situation of gas bubbles or streaks according to the species of microbe present and were extremely valuable aids in a decision as to the form of treatment required. Factors of importance in the production of gas gangrene were: 1. The proximity to contaminated soil; wounds of the lower limb showed a mortality three times as great as those of the upper, though wounds of the upper were more frequent. 2. Shell wounds were six times as frequent in gas gangrene as in ordinary infected wounds. 3. The presence of an infected "wad" of clothing kept up infection. 4. The interval between the wound and the first surgical intervention; insignificant wounds might cause fatal results if untreated and severely infected. 5. Early treatment was most important in the prevention of gas gangrene. 6. Vascular lesions were an important factor when due to injury; as a remedial measure, such as ligation of great vessels, they were not important; 22 cases with vascular lesions were followed by gangrene in 6 only. 7. 60 per cent. of gas-infected cases had fractures, and 71 per cent. of those of gas gangrene. 8. Wounds of the calf, trunk, or hip-joint were specially dangerous if deeply seated. 9. Tissue injury had an important influence; gas abscesses were frequently seen in gas infections at the site of subcutaneous injections or near simple fractures in the same case. 10. Intramuscular tension from within or without was a potent aid in the production of gangrene. 11. Joint injuries occurred in 13 per cent. of gas infections and in 20 per cent. of gas gangrene. They increased the gravity of cases, and damaged parts were difficult to immobilise without pressure. The flora of gas gangrene was usually multiple: *B. perfringens* was present in nearly every case, *B. sporogenes* in 41 cases, *vibrio septique* in 6 cases (several fatal); *B. histolyticus*, *B. Hibber IX*, and *B. oedematiens* were all reported, but less frequently. Streptococci of a virulent type were present in 59 cases and added to the gravity of the infection. Tetanus occurred in 15 cases, and was demonstrated bacteriologically in 7. Masked and latent forms of tetanus were described. Intrathecal administration of serum, 30 c.c. at a dose, together with subcutaneous injections up to 30 and 40 c.c. per diem, proved successful. Seven clinical forms of gas gangrene were noted: 1. Classic form (Weinberg). 2. Toxic or oedematous type. 3. Mixed forms. 4. Local gas abscess. 5. Superficial and deep-seated gas phlegmon. 6. Chronic and latent infections. 7. Gas septicaemia or pyæmia. Of 464 cases of gas infection 42 were fatal, 25 dying from gas gangrene, 4 with tetanus, and the remainder with severe fractures, or brain or abdominal injuries. Amputation was considered necessary in advanced cases of gangrene and performed 65 times with 48 recoveries by the open method with lateral incisions. When gangrene was limited to groups of muscles or joints, excision was performed 41 times with 33 recoveries. Hypertonic salt treatment alone was found to be unsuccessful, but combined with 2½ per cent. carbolic acid had given good results. Iodine vaccine-therapy was tried and appeared to be more successful with added

streptococcal infection. Other methods were used, such as continuous irrigation with eusol, Carrel solution, or normal saline (all apparently giving the same results). Ten cases of very severe gas gangrene had also been treated by anti-perfringens, anti-oedematiens and anti-vibrio septique serum, kindly supplied by Dr. Weinberg. In 5 cases (one being a septicaemia with triple anaerobic infection) the results had been successful. The fatal cases were already septicæmic before serum was given. There was distinct evidence that its curative use might be advantageous, and probably its prophylactic use even more valuable.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

Exhibition of Cases and Specimens.—Speech Records of Cerebral Diplegia.

A MEETING of this section was held on Nov. 24th, Dr. LEONARD GUTHRIE being in the chair.

Dr. GUTHRIE showed a case of Family Splenomegaly Jaundice in a girl aged 10 years. The father and two of the three surviving children suffered from the disease in its typical form. He also showed the third child, a girl aged 7½ years, as a case of ascites of obscure origin. The ascites had been of sudden onset and rapidly increased. A gallon of fluid was evacuated and had not reappeared after operation. The diagnosis lay between tuberculous peritonitis and an unusual form of the family disease.

Dr. F. LANGMEAD showed a case of Dystrophia Adiposa Genitalis with Congenital Lues in a boy aged 15 years and 10 months. The father had died from general paralysis and the mother had tabes dorsalis. The boy was stunted, obese, and feminine in build. Mentally he was childish. There was disseminated choroiditis with waxy atrophy of the discs in both eyes. No polyuria; and no glycosuria after having taken 130 gm. of dextrose. A skiagram showed a rather small pituitary fossa.

Dr. J. P. PARKINSON showed a case of Diabetes Mellitus and Infantilism in a girl aged 10 years. The disease had begun four years ago and growth had almost ceased at the same time. An X ray photograph of the skull showed a normal sella turcica, and one of the wrists showed bones the size and shape of those of a girl aged 6.

Dr. EDITH BRONSON (for Dr. G. A. SUTHERLAND) showed a case of Dermato-mycosis in a girl aged 5 years. The disease had begun in July, 1916, with fever, pains in the joints, and a leucocytosis of 23,000 white cells per cmm. The condition, which at first had involved chiefly the hands, forearms, feet, and the lower part of the legs, had gradually spread until all parts of the body, including the face, had become affected. With radiant heat baths there had been marked softening of the subcutaneous tissues.

Dr. E. A. COCKAYNE showed Hereditary Neuro-fibromatosis (von Recklinghausen's Disease) in a woman aged 35 and her two children, a boy aged 5½ years and a girl aged 10 months. In the mother there were innumerable punctiform pigment spots and café-au-lait patches and a few sessile molluscous tumours on the trunk and limbs. The children showed only café-au-lait patches, except for an early molluscous tumour on the boy. These had been present at birth.

Dr. J. D. ROLLESTON showed Hereditary and Familial von Recklinghausen's Disease in two sisters aged 19 and 11 years respectively. Their father had a generalised eruption of molluscous tumours, punctiform pigment spots, and café-au-lait patches. The elder daughter had in addition a large plexiform neuroma of the right upper arm, whereas the younger had only punctiform pigment spots and café-au-lait patches. Dr. Rolleston stated that the familial and hereditary form of the disease was of some rarity, only 42 cases having been recorded in the literature.

Dr. E. PRITCHARD showed a case for diagnosis. The patient, a boy aged 9 years, had been knocked down by a motor-car and on the next day had cough and pain in the chest. The chest on the left side had become smaller and was dull on percussion except for a small area to the left of the vertebral column, where it was resonant, and a tympanic area in the left axilla. The breath sounds were very weak. A skiagram showed considerable opacity on the left side. The heart was drawn over to the left.

Dr. E. W. S. RIPTURE read a paper on Speech Records in Cerebral Diplegia with indications of a new method of treatment.

Reviews and Notices of Books.

Surgical Contributions from 1881-1916.

By J. RUTHERFORD MORISON, M.B. Edin., F.R.C.S. Edin., F.R.C.S. Eng., Consulting Surgeon, Royal Victoria Infirmary, Newcastle-on-Tyne; Professor of Surgery, Durham University; Examiner in Surgery, Liverpool University. Vol. I., General Surgery. Pp. 427. Vol. II., Abdominal Surgery. Pp. 953. London: Simpkin, Marshall, Hamilton, Kent, and Co., Limited. Bristol: John Wright and Sons, Limited. Toronto: The Macmillan Company of Canada, Limited. 1916. Price 42s. net.

We welcome in collected form the articles on various aspects of surgery written by Mr. Rutherford Morison from time to time. It is always convenient, to put the matter on the lowest ground, to have in a compact guise the fugitive pieces of a great surgeon, and in the past we have had brought together, to quote only a few instances, the writings of Sir Benjamin Brodie, Mr. Cæsar Hawkins, and Dr. Henry Bigelow. This laudable precedent has been followed in the present instance, and we have here in two volumes a striking amount of valuable contributions to the literature of surgery; and though we thought that we were acquainted with most of Mr. Morison's writings, we must confess that we were somewhat surprised at the large number of papers, for in truth they form a somewhat formidable whole. Yet, though they may be so many, there is a striking unity which runs through them all; we find everywhere the same acute recognition of the essential points, the same accurate appreciation of the value of theories and methods, which have been recognised in Mr. Morison by all who have had the privilege of knowing him.

Mr. Morison studied under Lister, and therefore it goes without saying that he was an advocate, an enthusiastic advocate, of antiseptic surgery, but he has in no wise failed to recognise the value of "aseptic" surgery. In the present volumes there are to be found foot-notes which are comments on the papers, and represent the opinions of the author at the present time. Here we find no unwillingness to declare an alteration of opinion, and we meet with many indications that Mr. Morison has not merely kept himself fully abreast of the advancing wave of surgery, but that he has been one of our most active and original leaders of surgical thought.

There are few who will not profit from an examination of these volumes; many illuminating remarks will be found scattered about, and on nearly every page are to be discovered points of interest and importance. One of the volumes deals with general surgery and the other with the surgery of the abdomen; and it is worthy of note that the second volume is double the thickness of the first. The task of collecting these papers has been performed by Dr. W. D'Oyly Grange, of Harrogate, and the medical profession should be grateful to him for doing it; and he is also responsible for an excellent index, which adds much to the comfort and ease of those who wish to consult the volumes.

LIBRARY TABLE.

Diseases of the Throat, Nose and Ear, for Practitioners and Students. By W. G. PORTER, M.B., B.Sc., F.R.C.S. Edin. Second edition, revised by P. MCBRIDE, M.D. Edin., F.R.S.E. Illustrated. Bristol: John Wright and Sons, Limited. 1916. Pp. 280. Price 7s. 6d. net.—The first edition of Dr. Porter's useful manual has long been out of print, and the volume before us has been edited in his absence on active service by Dr. McBride, who has added a note on suspension laryngology and other recent methods. The scope of the book has not been altered, and it remains a source of sound teaching of moderate dimensions for the senior student and the general practitioner.

The Sexual Disabilities of Man, their Treatment and Prevention. By ARTHUR COOPER, M.R.C.S., L.R.O.P. Lond. Third edition. London: H. K. Lewis and Co., Limited. 1916. Pp. 227. Price 6s. net.—Mr. Cooper's book has evidently proved of use to the student and the practitioner for whom it was intended. Since it first appeared much has been written on the same subject,

especially in Germany and America, and the study has become to some almost an end in itself. But the book before us remains an adequate as well as a cleanly guide to sexual disabilities in man, and one which will enable the practitioner to get a grasp of an elusive subject and to be of real service in the intimate lives of his patients. A useful section on the prevention of sexual disability has been added to this third edition and considers venereal diseases in the light of the Report of the Royal Commission.

The Treatment of Diseases of the Skin. By W. KNOWSLEY SIBLEY, M.A., M.D. Camb., Physician to St. John's Hospital for Diseases of the Skin. Second edition. London: Edward Arnold. 1916. Pp. 304. Price 6s. net.—In his second edition, which follows the first after an interval of four years, Dr. Sibley has kept pace with the most recent developments of dermatology. A new chapter on radium has been added and those on X rays and ionisation extended. Short sections have been inserted dealing with angiotoma serpiginosum, angiokeratoma, atrophoderma neurticum, pellagra, strophulus, yaws, and other conditions on which interest has recently been focussed. Sixteen original photographs appear illustrating the results of special treatments. The general scope of the book remains the same, and it will be found useful for handy reference to the treatment of skin cases.

Links in a Chain of Research on Syphilis (Oxidation and Reduction). Being the Hunterian Lectures delivered before the Royal College of Surgeons of England. By J. E. R. McDONAGH, F.R.C.S. London: Harrison and Sons. 1916. Pp. 206. Price 5s. net.—In this volume Mr. McDonagh has reprinted his Hunterian Lectures as they appeared in THE LANCET of May 13th and 20th, 1916, with the text increased by the addition of references and of detailed notes of cases. A chapter has been added on the significance of the hydrogen and hydroxyl ions in biology, and a final one of 12 pages summarising his whole work. The book is conveniently divided into chapters and adequately indexed.

Diseases of the Eye: A Handbook of Ophthalmic Practice for Students and Practitioners. By G. E. DE SCHWEINITZ, M.D., LL.D., Professor of Ophthalmology in the University of Pennsylvania. Eighth edition. With 386 illustrations and 7 coloured plates. London and Philadelphia: W. B. Saunders Company. 1916. Pp. 754. Price 25s. net.—The last edition of this standard work has been exhausted in three years, and the author has again made extensive additions and alterations in order to keep it fully up to date. New paragraphs have been inserted on such matters as anaphylactic keratitis, the macular changes of family cerebral degeneration, the ocular symptoms of disease of the pituitary body, and various new operative methods. Lieutenant-Colonel R. H. Elliot describes his operation of corneo-scleral trephining and Dr. William M. Sweet a revised method of localising foreign bodies within the eye. The author has introduced metric equivalents of dosage throughout. Altogether the book merits the cordial reception which it has long received.

The Hope of the Future: The Management of Children in Health and Disease. By DR. MARY SCHARLIEB. London: Chapman and Hall, Limited. 1916. Pp. 261. Price 6s. net.—The sub-title explains the scope of this little book. Dr. Scharlieb confidently hopes that the attention at present focussed on infant welfare will lead young married couples to a wiser and more natural method of life, and she rightly states that the parent cannot provide intelligently for the health and welfare of children without some knowledge of their structure and functions in health and of the diseases by which they are menaced. The first four chapters of the book are devoted to a sketch of the child in health and its development, the fifth deals in general with the child in sickness, and the rest of the book treats of various diseased conditions. A useful list of formulæ is given in an appendix. The book may be commended with confidence to the mothers and nurses to whom it is addressed.

The Rhymes of a Red Cross Man. By ROBERT W. SERVICE. London: T. Fisher Unwin, Limited. 1916. Pp. 176. Price 3s. 6d. net.—Mr. Service has seen the horror of the western front as an officer in the Canadian Red Cross, and has contrived not only to keep sane but to perceive humour in the most tragic situations. The plaint of the warrior who was always balked of using his bayonet by the surrender of his opponents is a delicately witty

production. The author maintains a detached view of things, and his patriotism, although evidently genuine, does not prevent him from being a pacifist at heart and hating the whole business of slaughter. His rhymes are a serious contribution to the psychology of fighting.

JOURNALS.

Journal of Anatomy.—A change of very considerable importance to anatomists—one which has also an interest for all who are interested in the progress of medicine—has just been effected as regards the ownership and control of the *Journal of Anatomy and Physiology*. The journal was founded 50 years ago by Sir William Turner and Sir George Humphry to supply British anatomists and physiologists with a means of publication after the failure of the *Natural History Review* in 1865. The task of acting editor first fell to Sir George Humphry, then, for a long series of years, to Sir William Turner; afterwards to Professor D. J. Cunningham; while in recent years the main work of its management has devolved on Professor Alexander Macalister, of Cambridge University. After consultation with his colleagues on the editorial staff, Professor Arthur Thomson, Professor Arthur Keith, and Professor Arthur Robinson, Professor Macalister offered to transfer the management and ownership of the *Journal* to the Anatomical Society of Great Britain and Ireland. We learn that at a recent meeting of the Anatomical Society this offer has been gratefully accepted. The society caused a minute to be entered on its books, recording Professor Macalister's great services to British anatomy by the able manner in which he had conducted the *Journal*. The society has elected an editorial committee to manage the *Journal* on its behalf, the committee for the present year consisting of Professor T. H. Bryce (Glasgow University), Professor E. Fawcett (Bristol University), Professor J. P. Hill (University College, London), Professor G. Elliot Smith (University of Manchester), and Professor A. Keith (Royal College of Surgeons of England), the last-named being acting editor, and to him all communications should be addressed. It was also resolved to curtail the title to *Journal of Anatomy*, since there are two most ably conducted periodicals to serve the needs of physiology. We wish the *Journal of Anatomy* a continued career of prosperity under its new management.

Archives de Médecine Navale.—In this publication for September and October, the last issues which have reached us, Dr. Bertaud du Chazaud, a staff-surgeon in the French Navy, reports observations made on the Mongols when he was attached, in 1908, to the Lacoste Mission. This mission made archaeological investigations in Mongolia, seeking records of the Huns, the Turks, and the Mongols who were cradled there, and came forth thence, each in their turn, to terrify Europe. The mission travelled mainly in Northern Mongolia, to the north of the desert of Gobi, where are the Kalkhas, descendants of the soldiers of Genghis Khan, and that tribe of the Mongols whose blood has been kept most pure. Their most striking character is the breadth and roundness of their faces, their snub noses, and the epicanthal fold on their oblique eyes; their scanty moustaches and absence of beard is also noticeable. Dr. du Chazaud remarks that as each nation's æsthetic sense grows up within its own country, each will think of beauty as specially the characteristic of its own type, consequently the Mongol considers the long face and prominent features of the European to be horrible; to Mongols Europeans look like horses. There are no chairs in Mongolia; the Mongol generally sits on his heels with his feet flat on the ground. He hardly ever walks in that huge empty country, but rides everywhere, even if it be but a hundred yards away. His horsemanship is creditable, he rides well, and, on the other hand, his walk is clumsy. His sight and his hearing are keen indeed, trained in those vast plains, but his taste, which approves sour milk and rancid butter, differs from ours, and he is not inconvenienced by the odour of unwashed bodies. The infant's skin at birth is pink, but turns yellow as the child plays naked about the tent. A nomadic pastoral people, their wealth is in their flocks of camels, horses, cattle, sheep, and goats. Naturally milk is their foundation food, fresh, sour, or as clotted cream, dried cheese, and koumiss. Barley-meal they buy of the Chinese, but vegetables and fruits are unknown. Sheep are eaten on great occasions, otherwise only when one seems sick to death. The

butchers have a novel way of killing a sheep. The beast is laid on its back, the butcher kneels on the pubis, controlling the hind legs, pulls the fore-legs upwards, and makes a four-inch incision in the linea alba; through this he inserts his hand, feels for the left pillar of the diaphragm, burrows through that and ruptures the aorta within the cavity of the thorax. Dr. du Chazaud comments also on the marriage laws and burial rites of the Mongols.

New Inventions.

AN ORAL TUBE IN OPEN ETHER ANÆSTHESIA.

FOR the past nine months I have been using an oral tube for the administration of open ether in all gynæcological operations performed by Dr. W. Blair Bell at the Liverpool Royal Infirmary, and its use has been so uniformly advantageous that I am anxious to bring it to the notice of the medical profession. The tube is modelled upon one used in the United States and by Dr. Mott, of Stoke, and has been modified by Dr. Blair Bell, who first suggested its use to me. As shown by the diagram, it is a flat, hollow, metal tube $4\frac{1}{2}$ inches in length, with a flange at the external end, the upper edge of which is hollowed out to fit beneath the nostrils, whilst in the lower half of the flange there is a small slit, through which, if required, a piece of tape can be threaded and tied round the patient's neck. The tube is so



curved as to comfortably pass over the tongue into the pharynx. As soon as the patient's reflexes have disappeared the mouth is opened by depressing the lower jaw and the tube is slipped over the tongue. The lower jaw is then pushed forward by the middle finger of each hand pressing forward the angle of the jaw on either side, and at the same time gentle pressure exerted on the flange with both thumbs causes the tube to slip home. If the patient is only slightly under, the gag and tongue forceps will be required to open the patient's mouth sufficiently. The advantages of the tube are: It establishes a free and unobstructed airway whatever the position of the head or of the patient. It keeps the tongue from falling backwards, and thus is especially helpful in the Trendelenburg position. It is also useful in edentulous subjects in whom suction of the lips and cheeks produces occlusion. During the removal of the patient from the theatre to the bed its use prevents any cyanosis or obstruction to respiration due to flexion of the head or the jaw falling back.

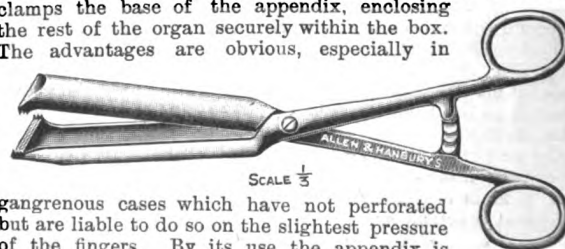
The tube is made and sold by Messrs. Alexander and Fowler, instrument makers, Pembroke-place, Liverpool.

MONA DEW ROBERTS, M.B., B.S. Lond.,
Hon. Anaesthetist, Liverpool Royal Infirmary.

Liverpool.

APPENDICECTOMY CLAMP.

I HAVE designed the clamp here illustrated for use in all cases of appendicectomy. When applied it efficiently clamps the base of the appendix, enclosing the rest of the organ securely within the box. The advantages are obvious, especially in



gangrenous cases which have not perforated but are liable to do so on the slightest pressure of the fingers. By its use the appendix is more easily manipulated and the risk of contaminating the surrounding parts much reduced.

Messrs. Allen and Hanburys, Limited, 48, Wigmore-street, London, W., are the makers of the instrument.

J. D. SPEID SINCLAIR, M.B., Ch.B. Glasg.,
Lieutenant, R.A.M.C.

THE LANCET.

LONDON: SATURDAY, DECEMBER 23, 1916.

The Universities and War Work.

It seems to be a general suggestion that the new Government is a panel of business men. Amongst other things, this should help the country to a wider conception of the services which research work and scientific study are rendering the State. The universities, both those of historic foundation and those which are situated amidst our throbbing industrial centres, have already placed their technological departments at the disposal of the Government and the manufacturer. To-day all over the country the university is working hand in hand with the factory, and a new education has thus been set up, founded on the general principle that in the interests of the nation science and industry should be brought into real and active coöperation. The days of supineness in the scientific conduct of manufacturing affairs are numbered, and the policy of developing the technological side of education is now bearing fruit, but this policy must be widely extended. It is well to remember that technical equipment formed a prominent factor in the strong position occupied by the enemy at the outset of the war, and there is no doubt that technology must claim our very serious attention if we mean to hold a successful place in the business of the world.

The debt which medical science owes to the researches made on behalf of industry is already large, and as the application of science to industry becomes closer, so is medicine likely to gain. It was the study of fermentation in the brewing trade which led to the germ theory of disease, while the introduction of antiseptics was made possible by the coal-tar industry. Incidentally the products of this industry, known as residuals, furnished a profusion of dye substances, the intelligent application of which enabled a discrimination of organisms to be made under the microscope. The microscope gained enormously as an aid to medicine when the aniline stains proved selective. Further, a vast series of synthetics have been prepared, some of great value in medicine, as the result of the union of scientific and industrial energy. These examples suffice to show how medical science has benefited by the intimate study of technological questions, and they bring out clearly the good, unexpected as well as anticipated, which follows the application of science to manufacture. Medical and scientific men have long appreciated the significance of these things, but the public and many leaders of business are still oblivious to the necessity of conducting commercial concerns on scientific lines. The future prosperity of industry in this country—and this affects the well-being of professional and commercial classes equally—can only be ensured by banishing once and for all the

"rule-of-thumb" principle. The spirit of university teaching has always been strongly opposed to this principle, and at last there is definite hope that empiricism in commerce will never see the light again. This is the meaning of the work which our great teaching institutions are doing at the present moment in furnishing the country with its arms of offence and defence. In the national crisis our universities—some of which have been popularly summed up for generations as asleep, and others of which are too young to have earned any general reputation one way or the other—have developed great and vigorous activities, devoting talent and skill to the successful issue of the war. Their laboratory staffs may be seriously depleted, but, unless called into service elsewhere, the professors are at their posts, to give the Government, or the industries concerned, technical advice and to undertake original researches such as those which have already added most materially to our chances of subduing a foe whose most formidable weapons have been industrial efficiency and ingenuity.

Any movement which impresses upon the community the splendid services which our universities are giving the nation in the present crisis is useful. It requires to be convincingly shown how essential is the relationship between science and industry, and how inevitable it is that we should adopt a system of education which, among other things, would disclose the vital bearings of science upon industrial development. In another column we draw attention to the important work that is being done by the Institute of Journalists, a section of which, including technical representatives of the institute, has been invited to study on the spot the facilities offered by the universities for research in relation to war and industrial requirements. The lessons inculcated by these demonstrations are indeed great, and the invitations extended to scientific journalists by the Vice-Chancellors of the Universities of Leeds, Sheffield, Liverpool, and Manchester have been readily accepted and widely appreciated. This is an excellent movement which will bear much fruit.

Belgian Doctors' and Pharmacists' Relief Fund.

THE second year of the working of the Belgian Doctors' and Pharmacists' Relief Fund closed on the last day of November, and at the December meeting of the executive committee the position of the Fund was reviewed with an eye alike to the past and the future. Roughly speaking, and including the interests on investments, the Fund has received £20,000 since its inauguration, of which £10,000 remain at the disposal of the subscribers. In the early days of the war the disbursements of the Fund were largely employed in giving immediate help to Belgian members of the medical and pharmaceutical professions, their wives and dependents, as they arrived in this country flying before the invasion of the Germans. For these victims of brutal aggression the Fund found sums of money in supplement of lodging allowances, and to meet

other necessary and immediate expenses. A distribution of clothes purchased by the Fund was organised, and professional employment was found where possible, both for doctors and pharmaceutical chemists. Other sufferers were assisted with money in special directions, such as the payment of travelling expenses, or in accordance with individual needs, as they were represented to the executive committee through the Belgian organisations in England for dealing with the needs of refugees, doctors or pharmacists. Registration fees were paid in behalf of the Belgian medical men who were qualified to take a place on the British Register, and for whom some professional engagement made this step advisable or necessary. Latterly the disbursements in these directions have, of course, been much smaller; some of the doctors and pharmacists have joined the Belgian Army, some have left the country, and some have found professional employment in the United Kingdom, and have thereby been rendered more or less independent.

But in the meantime the executive committee of the Belgian Doctors' and Pharmacists' Relief Fund learned with considerable accuracy of the terrible conditions in which the Belgian doctors and pharmacists were existing who remained under German dispensation in Belgium. A Belgian committee, entitled the "Aide et Protection aux Médecins et Pharmaciens Sinistrés," was formed by prominent Belgian practitioners and pharmaceutical chemists, in order to investigate the plight of their professional brethren, and for nearly two years this body has been sitting regularly at Brussels under the presidency of Dr. V. PECHÈRE, with Dr. LABUELLE and M. A. DELACRE as secretaries and Dr. H. COPPEZ as treasurer. The officers of the Belgian association soon began to transmit regularly to the British Fund the *comptes rendus* of their proceedings, and it at once became obvious that the avowed object of the Fund would be more quickly and efficaciously achieved if money could be sent to Belgium for distribution in accordance with the thoughtful and even elaborate plans that were being carried out from Brussels. Through the intervention of Mr. HERBERT HOOVER, chairman of the Commission for Relief in Belgium, the Fund has been able to make grants of money to suffering doctors and pharmacists in Belgium with regularity for some months—indeed, this course accounts for the bulk of the disbursements. It is proposed to continue these grants, at the rate of £800 per month, for the next four months in any event, and the money at present in hand will admit of the same course being pursued until the close of 1917. Before that time, however, it will be necessary to make a further appeal, and with that end in view a brief statement of the activities of the Fund will be prepared for publication.

The committee must be congratulated not only on the successful organisation of a large and valuable Fund, but also on the extraordinary lowness of the expenses of management, as revealed in the statement of accounts published on p. 1069. This has been rendered possible by the devoted nature of the voluntary assistance received.

Annotations.

"Ne quid nimis."

FOOD REGULATION AND A FOOD MINISTRY.

THE coming into force this week of the limitation of courses at public restaurants is a reminder of one side of the Food Controller's work. For these regulations Lord Devonport's predecessor was responsible. We do not know whether they will go far to remedy the threatened shortage of food-stuffs. We readily admit that an excess of food is habitually taken by many people who are in a position to pay for it, and that food may be wasted in consequence of the large variety of dishes required at a single meal. Here we may remind our readers of Rubner's observation that in Berlin before the war 100 grammes of fat were thrown away daily from plates and dishes by every family. The manual worker, who with his family represents so large a proportion of the population, is alike the one whose use of foodstuffs is most important and on whom any imposed restriction must press most hardly. The Food Controller's work will, we hope, include propaganda of public education on the subject of food values, emphasising the foods which really feed, and on the prevention of waste. The canteens in munition works are serving as admirable object lessons, and meal times might perhaps occasionally be used as laboratory demonstrations. The supply of potatoes is at the moment a matter of earnest concern to the Board of Agriculture, and a Departmental Committee is closely considering the question of assuring a sufficient supply of seed potatoes for next year. There is still gross waste in the preparation of potatoes for food, and we are glad to note that at least one of the large London caterers has for some weeks stopped peeling potatoes before boiling them. A useful part of the potato is removed with the skin and most people can eat potato skin with advantage. War bread is making its appearance at the baker's and many people will wonder why they thought they would prefer white bread. Captain Charles Bathurst, the Food Controller's representative in the House of Commons, recently stated that the unfair competition of imported flour is receiving attention, that confectioners will have some license in regard to their white flour until stocks have run out, and that the artificial bleaching of flour by chemical process is being watched with a view to some action being taken. Sugar remains the vexed question of the moment. We confess to much sympathy with the suggestion that the only people who should be allowed to eat sweetstuffs are the children of the poor and the soldiers at the front: in the former to supplement a meagre diet, in the latter to provide a rapidly available supply of energy for sudden emergencies and the relief of fatigue. The supply of sugar to the retail seller is already controlled. We can only hope that the patriotic restriction of its unnecessary use may anticipate the enforcement of control on the retail buyer, a measure involving much administrative machinery and expense.

A Bill has been introduced by the Home Secretary "for establishing certain new Ministries and for the appointment of additional secretaries or under-secretaries in certain Government Departments, and for purposes incidental thereto." The Ministries it is proposed to appoint are a Ministry of Labour, a Ministry of Food, and a Ministry of

Shipping. For the moment the wide powers conferred upon the Food Controller only concern us. The powers and duties of the Food Controller are defined. He is to regulate the supply and consumption of food in such manner as he thinks best for encouraging the production of food. For these purposes he will have such powers or duties of any Government department or authority, whether conferred by statute or otherwise. By an Order in Council His Majesty may transfer to the Food Controller or authorise him to exercise or perform concurrently with, or in consultation with, the Government department or authority concerned. Further powers may be conferred on him by regulations under the Defence of the Realm Consolidation Act, 1914, and regulations made under that Act accordingly. The office of Food Controller is to cease to exist on the termination of a period of 12 months after the conclusion of the present war or such earlier date as may be fixed by His Majesty in Council. Apparently Lord Devonport's duties are confined to questions of distribution, the curtailment of supplies, and the encouragement of home production. The question of securing an increase in imported supplies is being left, no doubt, to the Ministry of Shipping, which is asked, amongst other things, to "control and regulate any shipping available for the needs of the country in such manner as to make the best use thereof."

THE PATHOLOGY OF GAS GANGRENE.

ON Monday afternoon last, at the Royal Society of Medicine, Sir Almroth Wright delivered a short address on the pathology of gas gangrene, in which he described the recent work done by himself and his coadjutors abroad, and by other workers in laboratories at home, the purport of his remarks being to show the relation of laboratory research to clinical experience and procedure. Throughout the lecture the behaviour of the *Bacillus perfringens* was in particular question, but much, even most, of the teaching had application to bacterial infection in general. The lecturer introduced his subject by saying that while it was necessary to study the behaviour of bacterial infection in the laboratory so as to arrive at the therapeutic courses to be adopted, it must be remembered that laboratory methods might mislead, because wrong emphasis might be laid upon some quite accurate piece of research, whereby a half-truth would become magnified into the whole story. For instance, the gangrene bacillus in ordinary circumstances is an anaerobe, but the statement that it can only grow in the absence of oxygen must be taken with large reservations when other than ordinary conditions prevail. It is now known that this bacillus can grow in air in the presence of animal or vegetable tissue, and this with extreme vigour, wherefore the use of peroxide as a dressing and the opening up of wounds to the air, though, so far as they go, such treatment is founded on laboratory research, are not necessarily efficacious. In considering what other therapeutic measures might be possible Sir Almroth Wright commenced by demonstrating that a local concentration of the bacteria of gas gangrene was extremely favourable to a spread of the infection, for where the bacteria, implanted either in broth or in blood serum, were allowed by gravitation to concentrate themselves, they spread much more rapidly, and with the production of gas, than where they were disseminated throughout the

fluid. The first lesson which he drew from this demonstration of "avalanche" infection was that the presence in any wound of crypts, or of foreign bodies whose surface could supply a nidus for bacillary growth, was particularly favourable to a fatal spread of infection. Further laboratory experiments suggested that such a nidus was furnished by the recesses of cotton-wool, asbestos, or a rusty nail, just as much as by those of a carrot or a potato, indicating that in the laboratory experiments, where these vegetables had been used, the spread of the growth was not dependent on, or was only in some very indirect and secondary manner assisted by, the essential qualities of the vegetables. Having demonstrated that the anaerobic *Bacillus perfringens* can and will grow rapidly though air be present, the lecturer passed to the conditions of blood infection produced by the bacillus. Many charts were exhibited setting out the results of experiments proving that the bactericidal power of the blood is very great, but that in blood the same ominous spread follows concentration of the bacilli, and the lecturer suggested that two chemical factors were present when infection by the *Bacillus perfringens* took place. First, he said, the blood is made less alkaline by the action of microbes, while acidæmia favours their growth. Secondly, the antitryptic power of the blood is minimised by the disorganisation of the white corpuscles, and the destruction of these corpuscles also favours microbic growth; and he mentioned that Captain S. R. Douglas had shown in the Pathological Laboratory of St. Mary's Hospital that the antitryptic power of the blood being decreased, the spread of infection followed. The teaching arising out of Sir Almroth Wright's theory, and supported by numerous experiments, was therefore as follows. We have in gas gangrene two conditions—namely, the process of blood digestion by the bacillus producing acidæmia and the voiding of trypsin by the decomposition of the white corpuscles—whereby the bacillus is enormously assisted in growth; and all the time any mechanical or chemical assistance to concentration of the bacilli will have the same deleterious effect. In conclusion, Sir Almroth Wright detailed experiments made on rabbits and rats in support of what had started as a laboratory theory, and came to the conclusion that treatment by incisions and irrigation was justified by bacteriological research. In another column there will be found a summary of an interesting paper read before the Section of Surgery of the society by Miss M. H. F. Ivens, M.S., who has been working for two years at a French military hospital, the subject being on anaerobic wound infection. In this paper 107 cases of gas gangrene, regarding the flora as multiple and not limited to the *Bacillus perfringens*, were analysed. It is interesting to note that the factors of importance found in the production of these cases agree very well with Sir Almroth Wright's views.

THE BACTERIOLOGY OF WHOOPING-COUGH.

THE recent researches of Mme. Chievitz and Dr. A. H. Meyer, both of Copenhagen, into the bacteriology of whooping-cough have thrown light upon several important points in the natural history of that disease. It is due, as is well known, to infection by the minute *Bacillus pertussis* discovered in 1906 by Bordet and Gengou. This microbe may be cultivated from the sticky muco-purulent expectoration brought up at the end of the paroxysms of coughing. Grown on

Bordet and Gengou's special medium (gelatin, potato, and blood) in Petri dishes, the bacillus forms small polished and shining colonies that are highly characteristic. Like other investigators, Dr. Chievitz and Dr. Meyer have found it impossible to make the diagnosis of whooping-cough by the microscopical examination of stained smears of the sputum. A certain diagnosis can be attained only by culture of the *Bacillus pertussis*, a matter demanding at least two days. Their researches, based on the examination of 156 patients, have brought out the fact that after a patient has whooped for a month his sputum is free from the *Bacillus pertussis*—in other words, he may be regarded as no longer infectious to other persons. Dr. Chievitz and Dr. Meyer could cultivate the bacillus from the sputum of almost every patient during the first two weeks of the cough, reckoning the cough to precede the appearance of the characteristic paroxysms and whooping by a week. The microbe was isolated in 24 out of 33 cases in which the cough had lasted two or three weeks, in 9 out of 27 cases in which it had lasted from three to four weeks, and in 3 out of 27 in which it had lasted for from four to five weeks. A positive result was obtained in only 1 out of 42 patients who had coughed for over five weeks, and in this instance only a single colony was found. Acting on this discovery, the French Ministry of Public Instruction issued an Order in March, 1916, permitting children with whooping-cough to return to school after a month of whooping. Dr. Chievitz and Dr. Meyer also describe a new and simple method of obtaining the bacterial culture for purposes of diagnosis in cases of whooping-cough or suspected whooping-cough. It consists in getting the patient to cough, if necessary by depressing his tongue with a spatula, while an open Petri dish containing the culture medium is held 4 inches away from his mouth. In this way the patient inoculates the medium directly with droplets of his sputum. Collected and inoculated in this way the *Bacillus pertussis* grows with unusual strength and readiness. The second part of the work of Dr. Chievitz and Dr. Meyer deals with the diagnosis of whooping-cough by agglutination tests and the method of deviation of the complement. They find, as others have found, that agglutination tests are not practicable in whooping-cough. But the method of examining for deviation of the complement gave a positive result in 106 out of 112 patients. It takes some weeks to develop, being present in a quarter of the patients who had had the cough for a fortnight, in three-quarters of those who had coughed for three weeks, and in all those who had coughed for from five to eight weeks. After this time it slowly disappears again, but may be met with, apparently, even after the lapse of several years. Dr. Chievitz and Dr. Meyer argue that these results furnish additional proof that the bacillus of Bordet and Gengou is the cause of whooping-cough.

WATER-SUPPLY AND DRAINAGE OF SYDNEY.

NOTWITHSTANDING the outbreak of the war in August, 1914, which affected the activity of building operations throughout the Empire, there were as many as 8338 new buildings brought to completion at Sydney, New South Wales, in the 12 months ending June 30th, 1915. The total population of the area supplied by the Water Board of the city, including suburbs, is

estimated at 878,790, and the daily water consumption averages 40'86 gallons per head. Deacon's water waste detection meters have continued to give satisfactory results; in one district the waste was reduced from 16'9 to 0'9 gallons per head per day, and in another from 22'3 to 0'2 gallons. The use of galvanised iron for cisterns has been forbidden by the Board, as this material developed many defects and proved wasteful. The Metropolitan Board of Water-Supply and Sewerage has now a total length of 972 miles of sewers under its control, an addition of 42 miles having been constructed during the year ending June 30th, 1915. The population provided with sewerage facilities is estimated at 623,795, occupying 124,759 houses. The quantity of sewage pumped was 2590 million gallons, at a cost of £3 1s. 10d. per 1,000,000. Purification of the sewer air escaping from the main ventilating shafts was carried out, as an experiment, by means of a solution of chloride of lime distributed as a fine spray in one of the main ventilating shafts, 3 feet in diameter. Four sprays were used eventually, which gave excellent results up to a velocity of five miles per hour of air current. The old sewerage works of Sydney were designed on the "combined system," surface drainage as well as sewage being carried off and discharged into the harbour through five main outfalls. Owing to the consequent pollution of the harbour, with its direct menace to health, a Commission was appointed to inquire into the best means of remedying this evil. The result has been the construction of a new system of drainage, on the "partially separate" principle, which intercepts all sewage from the gravitation zone—that is, all over 40 feet above high-water mark; sewage from below this level is pumped into the gravitation system. There are three main outfalls: the northern, into the Pacific Ocean at Ben Buckler Point, which takes all the sewage that was previously discharged into the harbour; the southern, from the rest of the city and the southern suburbs, on to the sewage farm at "Webb's Grant"; and the western, for the western suburbs, discharging at the Rockdale end of the sewage farm. These works have been constructed by Government and transferred to the Metropolitan Board on completion. The Report,¹ which is signed by the President, Mr. W. J. Millner, is very fully illustrated with diagrams, maps, and statistical tables.

THE CHEMISTRY OF THE VITAMINES.

THE notes on the chemistry of the vitamins in recent numbers of the *Journal of Biological Chemistry* of Baltimore, include work done in this direction, mainly by Professor McCollum and his associates, which is of a very interesting character. They hold that in a diet sufficient for growth and well-being, and particularly for healthy reproduction, there must be not only the protein, fat or carbohydrate and mineral matter, which we have for years considered necessary, but also two further factors. One of these they call fat soluble A, found in some natural fats but not in all, and another, water soluble B, the vitamine recognised by Funk and others in their work on beri-beri and widely distributed in many natural foodstuffs, such as milk, eggs, meat, and vegetables. Clearly there is no shortage of either principle in the ordinary mixed diet, but it is observed that a diet to be suitable for the function of reproduction must contain more vitamins than are necessary merely for

¹ Sydney: W. A. Gullick. 1915. Price 6s.

the purposes of growth. The vitamins, it is concluded, are not formed by the mother, so that none can reach the infant unless taken in by the mother. The necessary factors for health and development were supposed to be present in a diet of wheat embryo. Yet young rats on a diet of wheat embryo alone do not grow; but they made some advance if 40 per cent. of the wheat embryo were replaced by dextrin, more advance if the wheat embryo was first extracted with ether and its oil mostly removed, more still if calcium lactate and sodium chloride were added to this diet, but their growth was doubled if they then got 5 per cent. extra of butter-fat, which is rich in fat soluble A. Other oils did not produce this conspicuous effect. Why did not the rats thrive on their diet of wheat embryo? Professor McCollum concludes that it was because the embryo contained a toxin, a toxin conspicuously manifesting its effect only when a diet was given that was barely sufficient for subsistence; with a more generous diet the other elements present improve nutrition and exalt resistance. To this wheat toxin swine are particularly susceptible, rats less, and chickens hardly at all. Swine fed exclusively on wheat show symptoms of a disorder indistinguishable from beri-beri, whether by symptoms or appearances, and full histories of their symptoms are given, with pictures of the animals and micro-photographs of sections of their spinal cords. This disease was cured by adding to the diet of the affected animals milk, alfalfa meal, or meat scraps. probably, it is held, because these add to the ration more fat soluble A and more salts, particularly calcium salts. It is, however, not easy to understand why the animals of Experiment 1 (vol. xxv., 2, p. 250) failed only in the eleventh month after growing to 225 lb., while those of Experiment 3 failed in the seventh month before reaching 200 lb., though on the same diet with 3 lb. of milk daily in addition. Lard does not appear to contain as much vitamins as does butter (Funk), for the cedematous conjunctivitis which seems to be recognised as the deficiency disease due to want of fat soluble A, is better antagonised by adding butter-fat to the diet than by adding lard. All the work is very suggestive, though more researches will be necessary before definite conclusions are arrived at.

EPIDEMIC INFECTIVE JAUNDICE AT THE ITALIAN FRONT.

IN a communication made to the Medico-Chirurgical Society of Pavia, and published in *Il Policlinico* (Practical Section, October 22nd, 1916), Professor Moreschi and Professor Carpi, majors in the Army Medical Service, draw attention to a considerable number of cases of jaundice among soldiers coming from the front on the Isonzo. The frequency of such forms of jaundice had already attracted the attention of Frugoni and Cannata, and other observers, who attributed its causation in the majority of instances to the organism of paratyphoid B. The latest observers made experimental researches during last August on 56 cases, in some of which there were prodromal symptoms with rigors and sharp rise of temperature sufficiently characteristic to differentiate them from simple catarrhal jaundice. Labial herpes was present in the majority of cases, and it was also noticed that there was no direct relation between the intensity of the jaundice and the gravity of the illness. Another sign which was significant

was furnished by the lymphatic system, for swelling of moderate degree frequently occurred in the glands of axillæ and groins. The stools were usually deficient in colouring matter, often greyish-white and of chalky consistency, while in other cases they remained coloured. The course of the malady was generally benign, but in some instances there were relapses with sudden rise of temperature in cases which had for some time become completely afebrile. Agglutination tests for typhoid and paratyphoid A and B were made in 33 of the patients with the following results: 30 negative reactions for typhoid, 27 negative for paratyphoid B, and 30 negative for paratyphoid A. Agglutination gave positive results for typhoid in two patients with a dilution of 1-20, in a third with 1-40; for paratyphoid B in one case with a dilution of 1-80, in three cases with 1-40, in two with 1-20; for paratyphoid A, in one case with a dilution of 1-60, in three cases of 1-40. Hæmoculture in four febrile cases was negative in all. Bacteriological examination for typhoid and paratyphoid in 14 cases gave all negative results. Blood examination made in a few cases failed to reveal spirillary forms. The observations of Hübener and Reiter having led them to believe that a spirochæte was the cause of Weil's disease, Moreschi and Carpi performed a series of experiments with a view to discovering a similar organism in their cases of epidemic jaundice among the soldiers. With three patients they inoculated 1 c.c. of blood taken directly from the arm into the peritoneum of a group of four guinea pigs for each patient, with the following results. No symptoms of the disease were noticed in the two groups from the first two patients, but in two of the animals inoculated from the third patient there occurred on the tenth day an icteric tint of the skin, conjunctivæ, and mucous surfaces, with bile pigment and albumin in the urine. Pathological examination of these two animals revealed, besides icteric changes, considerable enlargement of the liver and punctiform hæmorrhages in the intestines, but no spirochætic organisms were found either in the blood or in smears prepared from the various organs. When, however, an emulsion of the liver of these two animals was inoculated into the peritoneum of six other guinea-pigs, fever, jaundice, and albuminuria occurred, with death on the fifth to eighth day from collapse. In the liver, kidney, spleen, lymphatic glands, and blood Professor Moreschi and Professor Carpi found numerous very thin filaments stained bluish-red by Giemsa, 4-6 μ in length, with large curves usually not greater than 2-3 μ , isolated or in pairs, or even agglomerated in groups. This latter formation was especially observed in the blood of the right auricle taken immediately after death. Several of these forms presented one extremity curved on itself like a loop. True nodulated forms, such as are described by Hübener and Reiter, were not found. These researches tend to show that spirochætosis may play an important part in the genesis of the epidemic jaundice observed among soldiers at the front, but the mode of its transmission can only be determined by future observations.

THE subject of toxic jaundice in munition workers and troops—its origin, symptoms, pathology, treatment, and prophylaxis—will be discussed at a joint meeting of the Sections of Medicine, Pathology, and Epidemiology of the Royal Society of Medicine, on Jan. 23rd, at 5 P.M.

THE LANCET, VOL. II., 1916: THE INDEX.

THE Index and Title-page to the volume of THE LANCET completed with the issue of Dec. 30th will be ready early in the New Year. Owing to the continued shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a post-card to the Manager, THE LANCET Office, 423, Strand, London, W.C., when a copy of the Index and Title-page will be supplied free of charge.

REPORT OF THE LOCAL GOVERNMENT BOARD FOR 1915-16.

WE have received Parts I. and III. of the forty-fifth annual report of the Local Government Board, which, with a view to economy, has been further reduced in size. This reduction in size appears to have led to acceleration in preparation, because the present report, dated September, 1916, has made its appearance only seven months after that for the previous year (1914-15).

PART I.

Administration of the Poor-law.—We are informed that the total number of persons in receipt of Poor-law relief in England and Wales was considerably smaller at the end of the year 1915-16 than at the end of the preceding year, there having been a reduction of no less than 71,051 such persons. During the year under review there was a continuous decrease in pauperism until the second week of October, when the numbers stood at 561,889. From that date the numbers rose to 567,618 in the third week of December, after which they again decreased during the remainder of the financial year, with the exception of a slight rise in February last. The figures relating to the numbers of casual paupers relieved in England and Wales on Jan. 1st last and the previous four years are interesting and may be quoted. In 1912 there were 9732; in 1913, 8882; in 1914, 7568; in 1915, 5416; in 1916, 3576.

Distress amongst professional classes.—In the section of the report dealing with special work arising out of the war it is stated that the Professional Classes Subcommittee has continued to deal with the problem of distress amongst the professional classes, and that during the year grants from the National Relief Fund amounting to £26,409 have been made on the recommendation of this subcommittee to benevolent societies and similar associations representative of the different professions affected.

War refugees.—During the year 1915-16 the philanthropic and other agencies which welcomed the Belgian refugees to this country in 1914 have continued their work of succouring these unfortunate persons. Many of the refugees have succeeded in finding work and have become able to support themselves, while others, who on arrival were possessed of means, have exhausted their resources and have had to avail themselves of assistance. A list of the refugees established in London was given in the White Paper (Cd. 7763), which also showed the number of refugees who had been admitted to the several institutions up to Dec. 31st, 1914. The total number of refugees received in the refuges from the date of their establishment until March 31st, 1916, was 114,934.

Employment of sailors and soldiers disabled by the war.—The Committee upon the Provision of Employment for Sailors and Soldiers Disabled in the War, which was appointed by the late President of the Local Government Board, Mr. Herbert Samuel, in February last, under the chairmanship of Sir George H. Murray, reported in May, recommending that a Central Committee should be appointed by His Majesty's Government to look after sailors and soldiers disabled in the war, and that their duties should include: (a) The restoration of the man's health, where practicable; (b) the provision of training facilities, if he desires to learn a new trade; and (c) the finding of employment for him, when he stands in need of such assistance. In accordance with these recommendations the Statutory Committee of the Royal Patriotic

Fund Corporation, established under the Naval and Military War Pensions, &c., Act, 1915, was specifically charged with the function of making provision for the care of disabled officers and men after they have left the service, including provision for their health, training, and employment.

PART III.

Tuberculosis.—It is satisfactory to learn that, notwithstanding the difficulties created by the war, some progress has been made with the development of approved schemes for the treatment of tuberculosis, and that a number of institutions, the erection of which had been undertaken previous to the war, have been completed and brought into use. Up to April 30th, 1916, 288 residential institutions, containing 11,227 beds, and 355 tuberculosis dispensaries had received the approval of the Local Government Board. The last issue of this report contained a statement on the arrangements which had been made for the provision of residential treatment for officers, non-commissioned officers, and men about to be discharged from the Army on account of tuberculosis who are not insured under the National Insurance Acts and who are not in a position to obtain treatment at their own expense. These arrangements have now been extended to similar cases amongst officers and men of the Royal Navy and the Royal Marines, as well as to soldiers whose homes are not in the United Kingdom. With the view of securing that men suffering from tuberculosis are not admitted into the Army, a circular letter was issued by the Local Government Board on May 9th urging local authorities to allow their tuberculosis officers to assist the military authorities in the examination of recruits and in other ways as may be desired. Regulations were also issued on May 13th requiring all medical officers of health to send to the Army Council periodically lists containing the names and other specified particulars of all male persons of certain ages who have been or may be notified as suffering from tuberculosis. The regulations provide that all information received in pursuance thereof shall be regarded by every person who has access thereto as confidential. It is, of course, very important that persons suffering from tuberculosis should not be called upon to undertake military service, and the arrangement outlined above should go far to secure this end. Up to April 30th the appointment of 257 tuberculosis officers had received the approval of the Local Government Board, and of these 110 had at that time resigned, either temporarily or permanently, to render war service. The total amount of maintenance grant paid during the year ended March 31st was £218,376 18s. 5d., and the total grants paid in respect of expenditure incurred during the financial year 1914-15 amounted to £176,004 7s. 1d., inclusive of the grants on account paid during the year.

Infectious diseases.—In the section devoted to infectious diseases an interesting table is given showing the notifications for 1915 and the three preceding years of the more important infectious diseases amongst the civilian population. This table shows that there has been a decrease in the number of notified cases of most of the diseases with the exception of cerebro-spinal fever. The figures for this disease may be given. In 1912, when only partial returns were available, 272 cases were notified; in 1913, 304; in 1914, 315; while in 1915 there were no fewer than 2566. Special investigation of the disease was instituted by the Local Government Board, the results of which have been published in a report dealing with the matter.¹ During the first six months of 1915 measles was very prevalent, and caused 12,414 deaths, as against an average of about 11,000 per annum during recent years. It may be remembered that an Order was issued by the Board on Nov. 27th, 1915, making measles and German measles compulsorily notifiable, requiring medical officers to take steps for investigating the source and for preventing the spread of infection, and authorising local authorities to provide medical (including nursing) assistance for the poorer inhabitants of their districts. Ninety cases of small-pox were notified during 1915, and there was little spread of the disease in that year. In the spring of 1916, however, small outbreaks of the disease occurred in South Wales, South Lancashire, and in other parts of the country. Local authorities generally took energetic measures to limit these outbreaks by prompt isolation, vaccination of contacts, &c., and the

¹ Reports of the Local Government Board on Public Health and Medical Subjects (New Series, No. 110), reviewed on p. 1049 of THE LANCET, May 20th, 1916.

medical inspectors of the Local Government Board were constantly engaged locally in assisting the authorities to discover the source of infection and to limit its spread. By June, 1916, the number of cases, which had averaged 33 for each of the four previous months, had become reduced to 6. In view of the possibility of a recrudescence of the disease, the Local Government Board have reviewed the isolation hospital accommodation available for small-pox, especially in the counties which have been particularly threatened by the disease, and they are of opinion that, in spite of the general restriction on capital expenditure, it is important that some accommodation, which is capable of extension, should be provided for every area, so that any case that may arise can be promptly isolated. In certain instances county councils can most readily and economically provide the necessary accommodation, and they have been informed that the Board is willing to issue orders under the Public Health (Prevention and Treatment of Diseases) Act, 1913, constituting them the authority for this purpose.

Vaccination.—The latest statistics have not yet been tabulated, but there is no reason to suppose that the decline in vaccination has been arrested. We are told that it may be assumed that more than half the children now born escape vaccination, and that by far the greatest proportion of children unvaccinated are exempted by a declaration of conscientious objection to vaccination made by their parents. Comment is needless. We only hope that the consequences which are bound sooner or later to follow the present neglect of this important preventive measure may be deferred until after the war, otherwise the consequences to the nation may be of a very serious character.

Prevention and treatment of venereal diseases.—The findings of the Royal Commission on Venereal Diseases are, of course, well known to readers of THE LANCET, as is also the fact that the Government has made provision for the refunding of 75 per cent. of the cost of schemes which have been approved by the Local Government Board. The prevention of these diseases is a very important public health problem, and we hope the measures now being adopted may do something to combat an evil that has been too long neglected.

Medical officers on military service.—In February last, at the request of the Central Medical War Committee, the Local Government Board obtained from each local authority a return of the medical men employed by them, giving particulars of those already serving with the forces, those under the age of 45 who could best be spared if a further call were made, and what arrangements could be made for the discharge of their duties during their absence. The replies showed that the number of medical men wholly or partially employed by local authorities who were then serving with the forces was about 400, and indicated that it was unlikely that any further considerable number could be spared without risk to the public health of the country. At the present time about 250 medical men who ordinarily give their whole time to posts under local authorities are on military service, and about the same number of medical men under 45 years of age holding such posts are still engaged on their civil duties.

Maternity and child welfare.—During the year under review the Local Government Board has continued its efforts to induce all local authorities to adopt measures for the promotion of maternity and child welfare, and schemes have now been approved for nearly all the large urban districts, a considerable number of the smaller districts, and for the majority of the counties of England and Wales. In connexion with this work, grants from the Imperial Exchequer have been paid during the year amounting to about £42,000—viz., £33,500 to 311 local authorities and £8500 to 93 voluntary agencies. Nearly 400 whole-time and over 600 part-time health visitors have now been appointed by local authorities, and a considerable number of salaried health visitors have also been appointed by voluntary societies working in co-operation with local authorities. Over 300 municipal maternity and child welfare centres have been established and more than 350 voluntary centres. In many of these regular medical supervision is available. It is satisfactory to learn from this report that the number of untrained midwives is steadily diminishing throughout the country. In sparsely populated rural districts difficulty is sometimes experienced in filling

the places of untrained midwives by certified women. Excellent work has been done by county nursing associations in securing the provision of nurse-midwives in such areas through the medium of district nursing associations, and during the past year the Local Government Board has paid grants amounting to £2900 to 23 county nursing associations in aid of the midwifery service of the district associations.

INDUSTRIAL RESEARCH AT THE UNIVERSITIES.

IN THE LANCET of Oct. 21st last we referred to the interesting demonstrations which were given in the Universities of Leeds and Sheffield of the facilities which the great technological schools of the universities are offering for carrying out scientific research. Similar demonstrations have since been given at the Universities of Liverpool and Manchester, and last week a circle of scientific, technical, and trade journals, acting as a section of the Institute of Journalists, visited the laboratories, workshops, and machine sheds which form an important part of the curriculum amply provided in these teaching centres.

At Liverpool, in the unavoidable absence of the Vice-Chancellor through illness, Professor Herdman welcomed the visitors, and in a brief address explained the work of the various departments of the University. They were then taken through the laboratories and technical sections, where the professors gave short and instructive references to the kind of work performed. The School of Tropical Medicine was visited and proved of great interest. A large amount of routine work is being done in connexion with dysentery, malaria, and other tropical diseases among soldiers invalided from the Expeditionary Forces, and the bearing of this work upon the progress of commercial development in the tropics was explained. In the chemistry department the preparation of various drugs was in progress, and considerable attention has been given to the making of dye-stuffs and to the testing of munition materials. Researches have also been conducted on the preparation of β -eucaine, salvarsan, phenol, salicylic acid, picric acid, atropine, and dye-stuffs of the phthalein and anthracene groups. The bio-chemical department showed the important services it was rendering in regard to many technical problems connected with medicine, bacteriology, agriculture, fisheries, and the food, milk, drug, and leather industries. The bacteriological laboratory is recognised by the War Office as the centre for Liverpool, Birkenhead, and other places for the diagnosis of cerebro-spinal fever among the troops, while examinations are made there also in connexion with cases of dysentery, typhoid, and paratyphoid. The pathological department has issued during the last two years over 10,000 reports upon materials from wounded or sick soldiers. The work done under the Faculty of Engineering was next illustrated, and there were many interesting things to be seen in the departments of mechanical engineering, applied electricity, refrigeration, and so forth, all prodigiously activated by the great demands of the war.

At Manchester the visitors were received by the Vice-Chancellor, Sir Henry Miers, in the Council Chamber of the University, who gave an interesting summary of the work connected with the war that was being done by the faculties. The University authorities, he said, had given a very ready response to the Government in carrying out researches in many directions, and he expressed the view that a strong effort should be made to impress upon the legislature and the public the great importance of the application of science to industry. The visitors were most impressed by the magnificent School of Technology which Manchester possesses. It is claimed to be the finest example of a technological school in the kingdom, if not in the world, and it is interesting to add that, apart from administration and finance under the control of the City Council, the work of the Faculty of Technology is controlled by the Senate of the University through the Board of the faculty. As is pointed out, the School of Technology has thus a more democratic form of government than any other University institution in this country, its governing body being the Manchester City Council. A tour round the various departments soon convinced the visitors of the special service which many members of the University had been able to render both

in an advisory and experimental direction in connexion with the war. Researches of the most important character have been undertaken in the departments of engineering, chemistry, metallurgy, physics, textiles, electro-technology, public health, and pathology, while members of the staff have been called to work for the Admiralty, the War Office, the Local Government Board, the Board of Trade, and other Government departments. The demonstrations were of a most interesting character, and the general impression carried away was that researches conducted in the University are bound to have an important influence upon the prosperity of British industry.

It is quite clear that in the interests of the country industrial research must be given a prominent place in the future curriculum of our universities and must receive every encouragement from the State.

THE CONTROL OF VENEREAL DISEASES.

National Council for Combating Venereal Diseases.

THE National Council for Combating Venereal Diseases has issued an interim report detailing its recent activities in connexion with the Army and with the medical profession. The Council has been in communication with the Education Committee of the London County Council, and conferences have been arranged with the representatives of the principal societies dealing with secondary education among boys. In view of the fact that treatment centres will be opened in Greater London and many counties and provincial centres at the beginning of the New Year, the Council proposes to undertake widespread propaganda, to which further reference will be made.

City of Liverpool Scheme.

Dr. E. W. Hope, medical officer of health of Liverpool, has sent us a copy of a scheme drawn up by himself and approved by the health committee of the city council and by the port sanitary and hospitals committee. It is first stated that a systematic examination of stillborn infants by the city bacteriologist has shown that syphilis was a cause of the stillbirth in a very large proportion of cases. To carry out the recommendations of the Local Government Board with regard to the control of venereal diseases a joint committee has been appointed by the city council consisting of representatives of the two committees mentioned, together with two additional medical men nominated by the Liverpool Medical Institution to represent hospitals and general practitioners respectively. The University has instituted a post-graduate course in modern methods of diagnosis and treatment conducted by Dr. F. P. Wilson, lecturer on venereal diseases. Professor J. M. Beattie, city bacteriologist, has arranged for reports on material from patients suspected to be suffering from venereal disease, and a number of treatment centres are also being prepared. The Royal Infirmary is providing 20 male beds under the honorary charge of Dr. F. P. Wilson, and a resident medical officer will be appointed, who will rank as house surgeon and divide his time between the venereal departments and the skin clinic, while two qualified non-resident clinical assistants, one of each sex, will be paid on the basis of time. The provision of female beds affords for the moment the principal difficulty, but the approximate cost of necessary alterations at the infirmary is estimated at £1100. Professor E. E. Glynn, pathologist to the infirmary, will carry out pathological investigations, for which a yearly sum of £105 is budgeted, the expenses of the city bacteriological department being estimated at £300 per annum. The cost of salvarsan or its similars is estimated at £150 per annum for 700 injections. At the Royal Southern Hospital it is proposed to build an annexe to accommodate 16 patients, the same number of each sex. The Children's Infirmary, the Samaritan Hospital, and the Shaw Street Hospital for Diseases of Women are willing to continue as heretofore the treatment of sequelæ of venereal disease, but no lines of extension have yet been formulated. The David Lewis Northern Hospital will continue its present work. The in-patient treatment of gonorrhœal ophthalmia of infants is already provided for at the St. Paul's Eye Hospital; others attend at the Eye and Ear Infirmary, Myrtle-street. The cost of this work is budgeted at £1000. At the Skin

Hospital, Pembroke-place, it is estimated that the substitution of salvarsan for treatment on the old lines will raise the cost of dealing with the present number of patients from £400 to £2000. The Liverpool Diocesan Association for Preventive and Rescue Work has put in an important claim to the treatment in one of their homes of young girls who would otherwise be sent to the lock wards of the workhouse in order to combine the best medical treatment with moral reclamation. They estimate the yearly cost at £500, with initial expenses of £200, and suggest an honorarium of £80 for the lady medical officer. In an appendix to the printed scheme Dr. Hope give a series of forms and circulars suggested for the practitioner's use.

The Action Taken in Belfast.

At a meeting of the medical profession of Belfast and neighbourhood, called conjointly by the secretaries of the Ulster Medical Society and the Ulster branch of the British Medical Association, and held in the Medical Institute, Belfast, on Dec. 15th, Mr. Robert Campbell, President of the Ulster Medical Society, being in the chair, the following resolutions were passed after a long and full discussion:—

That the medical profession of Belfast and neighbourhood take steps to have a branch of the National Council for Combating Venereal Diseases formed.

That the medical profession of Belfast and neighbourhood strongly urge, from their professional knowledge of the disastrous effects of venereal diseases in every department of medical practice, that the most modern scientific methods be made more freely available for their diagnosis and treatment. They think the time is now ripe for the Local Government Board in Ireland to draw up regulations (after consultation with the medical profession) so that local health authorities may suggest schemes for the control and prevention of venereal diseases, as has already been done by the Local Government Boards of England and Scotland.

A committee was then appointed to take the necessary steps to carry out the above resolutions. It is expected that a deputation of medical practitioners and members of the public who are anxious to give their help and assistance will wait on the Lord Mayor of Belfast, asking him to summon a meeting for the consideration of the whole question.

Compulsory Measures in Bavaria.

The Munich Medical Society recently appointed a Commission to study the administrative measures necessary to deal with the venereal diseases in the kingdom, and a summary of their proposals appears in the *Munch. med. Wochenschr.* of Nov. 28th.

1. Notification shall be compulsory, both in institutions and in private practice, for gonorrhœal infection of the genito-urinary system, conjunctiva, and rectum, for soft sore, for syphilis in its primary and secondary stages, for syphilis in its tertiary stage if locomotor organs, visible mucous membranes, sense organs, or central nervous system are affected, and for congenital syphilis.
2. Any change in the patient's address must be notified.
3. The doctor must also notify in cases where the patient seeks his advice on account of another illness whether or not treatment is given, and even when the patient refuses to be treated.
4. The notification must be made within three days in writing on special post-free forms.
5. The conclusion of treatment must also be notified, including a statement as to whether, and if so when, a second examination or course of treatment is required.
6. Persons who feel themselves aggrieved by the statement that they are suffering from venereal disease are to be referred to an official medical officer, who shall assess the claims for the guidance of the court to which the patient appeals.
7. A special department under the direction of an expert doctor shall keep lists of all patients notified, with the necessary remarks regarding further examination and treatment. This department shall have the right to warn a refractory patient and to insist on treatment, if necessary by sending him to an institution. It shall have the right also of sending into an institution patients whose treatment does not seem assured outside. Grounds for this may arise in connexion with housing conditions, occupation, neglect or refusal of treatment, and finally severity and infectiousness of the particular case. The notifying doctor can suggest institutional treatment.
8. All doctors and officials are bound to secrecy in regard to cases of venereal disease which become known to them. A copy of all notifications, limited to forms containing name, place, and day of birth, is to be sent to the proper authority at the patient's place of birth for registration.
9. All members of a household who have with some degree of probability had sexual relations with an infected member of it may be brought to the notice of the notifying or treating doctor for examination and treatment. This instruction must be omitted if any overwhelming disadvantage in any other direction were to be feared.
10. Persons also who are not under medical treatment, but in whom suspicion of the existence of venereal disease arises, may be sent to be examined and, if found necessary, treated.
11. With the military or naval authority arrangement is to be made that persons requiring observation or treatment be notified on their discharge from the service.
12. Non-medical persons shall be forbidden to treat venereal diseases or to sell remedies for their treatment. Such remedies are to be entered on a list, which shall be kept up to date, and dispensed in pharmacies solely on the prescription of a qualified doctor, in the quantity prescribed, and only once.

13. Arrangements must be made that all venereal patients are sufficiently treated. As far as this is not already arranged by insurance societies and sick clubs, care should be taken that poor patients are treated free of cost, if necessary in institutions, and that loss of wages is, as far as possible, made good, except when treatment is refused short of compulsion.

The Commission has drawn up the regulations for putting these sweeping compulsory measures into force, and it is probable that they will shortly receive official sanction.

MEDICINE AND THE LAW.

Private Rights and Municipal Authorities: a Question of Damage.

At a recent meeting of the Chard town council a letter was read from 11 ratepayers who wrote: "We understand that we, who have suffered pecuniary loss through ourselves or members of our family having taken typhoid fever as a result of the contaminated water-supply of the borough, have a claim against the council for reimbursement of our loss." Some discussion took place and the matter was referred to the finance committee. As the persons claiming compensation from the town council have clearly been advised that they have grounds for doing so owing to neglect on the part of the council in performing its duties towards them, discussion of the facts upon which the Chard ratepayers would have to rely in seeking to establish the liability of the local authority would be out of place. It is enough to point out the importance of claims of this kind, if made, being pressed home, so that both parties, and others in similar positions, may be made aware of their relative rights and obligations. In such a case as that indicated in the letter quoted above it is evident that if disease is proved to have been the result of defective public sanitation, private precaution would not have prevailed to prevent it. Individual effort can only be directed towards stimulating the efforts of the public body entrusted with that task, towards strengthening the hands of the medical officer of health in the performance of all his duties, and towards enforcing full recognition of the power of sanitary science to protect the community. Medical officers of health and the officials connected with them do not work always under easy conditions, and they require the support of public opinion as well as of those members of the local authority who are in sympathy with their efforts.

A Police-court with a Psychopathic Laboratory.

The November issue of the *Medico-Legal Journal* (New York) contains some interesting notes upon the "Psychopathic Laboratory" recently instituted in connexion with the Municipal Court of Chicago. The judges of the Morals, Domestic Relations, and Criminal Branch Courts and of the Boys' Court refer all defendants to this laboratory, and sometimes witnesses who are suspected of being insane, feeble-minded, or afflicted with other mental ailments. The history and circumstances of each case are taken into consideration in the laboratory, and physical examination of the subject is combined with neurological, psychological, and other tests which, it is claimed, are standardised through application to thousands of normal children of various ages. No doubt there is ample work for such a laboratory in the court to which it is attached, and the experiment should be watched with interest by many in our own country who feel that no small number of feeble-minded persons are every year punished as criminals and denied all hope of improvement and reform.

The Cornwall Insurance Committee and Unregistered Dentists.

At the last meeting of the Cornwall Insurance Committee Mr. A. P. Trinder moved a resolution to the effect that it was contrary to the principles of the Insurance Act, and inimical to the interests of the insured themselves, that patients requiring dental treatment should be sent to "unregistered" dentists. Dr. A. E. Permewan seconded this. Mr. Tabb proposed that the words "unless the circumstances are exceptional" be added as an amendment. The speaker stated that the Sanatorium Committee had always refused or rejected estimates from unregistered "dentists," except in the case of a patient who lived in an "outlandish part of the county," and here the offer was accepted, "provided the work was done to the satisfaction of the doctor in

charge of the case." This, he added, "placed the responsibility on the panel doctor." The medical representatives explained to the meeting that there was no part of the county outside the reach of a registered "dentist." They added that 99 medical men out of 100 would refuse to act in conjunction with unregistered men, and if any did so the General Medical Council would soon interfere. One of the members remarked that the Insurance Committee "might themselves be liable if anything happened by their sending a case to an unregistered dentist." Eventually the amendment was carried by 22 votes to 10.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

A MEETING of the Committee was held at THE LANCET Office on Dec. 14th, when the position of the Fund at the close of the second year of working was considered, and the following balance-sheet, duly audited, was presented by Dr. H. A. DES VŒUX, the honorary treasurer, being a cash account of the Fund from Dec. 1st, 1915, to Nov. 30th, 1916:—

| Receipts. | | | Payments. | | |
|------------------|---------|-------|---------------------------------------|---------|-------|
| | £ | s. d. | | £ | s. d. |
| Dec. 1st, 1915: | | | Relief | 6,635 | 5 9 |
| Balance | 15,608 | 12 0 | Clothes | 105 | 14 4 |
| Nov. 30th, 1916: | | | Administration expenses... .. | 12 | 14 3 |
| Donations | 929 | 19 7 | | | |
| Interest | 803 | 8 0 | Balance at bank. | | |
| | | | £2699 3s. 7d.; | | |
| | | | Treasury Bills at cost, £7889 1s. 8d. | 10,588 | 5 3 |
| Total | £17,341 | 19 7 | Total | £17,341 | 19 7 |

Messrs. Crewdson, Youatt, and Howard, chartered accountants, have examined the above account with the books and vouchers of the Fund and have certified it to be correct.

The treasurer gave a general summary of the financial circumstances and showed that the total donations to the Fund up to Nov. 30th amounted to £19,500 6s. 5d., including the sums collected by national committees in Scotland and Ireland; the interest on Treasury Bills and money on deposit amounted to £826 14s. 6d.; while the financial position on the day of the meeting was that £10,000 remained in hand after sending the sum of £800 per month for a considerable period to Belgium for the relief of doctors and pharmacists and their wives. On Nov. 18th Treasury Bills for £8000 were bought, which mature in February. From the beginning of June up to the end of November £827 2s. 8d. was received, and during this period £4904 was expended, £4800 of this being the *mensualités* sent direct to Belgium. A little over £100 had been distributed in small sums in England for the relief of Belgian doctors and pharmacists or their wives or dependants during the period.

The Committee, on considering the financial statement, decided to continue the *mensualités* to Belgium for the ensuing four months, though aware that at that rate of expenditure the sum at present in hand would not last more than a year. It was decided, however, to prepare a brief statement setting out the position and activities of the Fund, so that, in making any further appeal that might be necessary, the evidence would be clear of the valuable nature of the Fund's activities.

The question of the possibility of assisting Russian medical men, prisoners of war, under whose care many English prisoners have derived benefit, was brought before the committee. While it was not thought that the Fund raised for Belgian doctors, pharmacists, and their dependants could possibly be administered for the good of anyone else, the idea of starting a small fund among English medical men on similar lines, and having the Russian doctors, prisoners of war, as its object, was discussed sympathetically.

Sir Rickman Godlee, chairman of the Committee, announced that he had received from Canada a case of instruments, which have been despatched straight to Belgium through the intervention of Mr. Hoover.

The address of the honorary treasurer of the Belgian Doctors' and Pharmacists' Relief Fund is Dr. H. A. Des Vœux, 14, Buckingham Gate, London, S.W., to whom

all subscriptions should be sent. The honorary secretaries are Dr. S. Squire Sprigge, THE LANCET Office, 423, Strand, London, W.C., and Mr. W. J. Uglow Woolcock, the Pharmaceutical Society, 17, Bloomsbury-square, London, W.C.

Surgical instruments should be sent to the Master of the Society of Apothecaries, Apothecaries' Hall, Blackfriars, E.C.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

M. O. Hunter to be temporary Surgeon.

ARMY MEDICAL SERVICE.

Lieut.-Col. A. B. Soltan, C.M.G., R.A.M.C. (T.F.), to be temporary Colonel.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. C. A. Peters, C.A.M.C., to be A.D.M.S.

Major J. Matthews to be temporary Lieutenant-Colonel.

C. H. Muller, South African M.C., to be temporary Lieutenant-Colonel.

J. Hunter, South African M.C., to be temporary Major.

Temp. Lieut. C. C. B. Thompson to be temporary Captain.

To be temporary Captains: R. P. McNeil, D. S. E. Macnab,

W. McG. Montgomery, J. Tremble, T. J. W. A. Johnston, R. I. Wolfe, K. A. Gilchrist, J. B. K. Tough, J. C. Venniker, T. A. Fuller, W. H. Watson, and P. E. Millard (all South African M.C.).

J. D. Milne to be temporary Honorary Lieutenant whilst employed with the Welsh Hospital, Netley.

The following relinquish their commissions: Temp. Cpts.

H. H. C. Fuller, F. W. Twort, H. Croly (on account of ill-health), and Temp. Lieut. T. Ewing.

Major (temp. Lieut.-Col.) J. Williamson relinquishes his temporary rank on re-posting.

SPECIAL RESERVE OF OFFICERS.

To be Lieutenants: G. S. Martin, from Aberdeen University Contingent, O.T.C., R. V. Clarke, and M. A. White, from Edinburgh University Contingent, O.T.C.

TERRITORIAL FORCE.

Lieut.-Col. E. J. R. Evatt to be seconded whilst holding appointment of Assistant Director of Medical Services.

Majors J. McD. Nicoll and P. R. Ash to be temporary Lieutenant-Colonels whilst commanding a Field Ambulance.

Cpts. (temp. Majors) N. C. Rutherford and T. A. Green to be temporary Lieutenant-Colonels whilst commanding a Field Ambulance.

Capt. G. K. Maurice to be temporary Lieutenant-Colonel whilst commanding a Field Ambulance.

Lieutenants to be Captains: W. G. Cook, W. O'Brien, J. H. Paul, and R. S. Weir.

General Hospitals: Capt. A. E. Wilson resigns his commission.

Attached to Units other than Medical Units.—Lieut. J. Wilson, W. Cullen, and G. R. Rickett to be Captains. Lieut. R. E. Pitts to be Lieutenant. K. Atkin to be Lieutenant.

TERRITORIAL FORCE RESERVE.

Capt. P. T. Jones, from Home Counties Field Ambulance, to be Captain.

INDIAN MEDICAL SERVICE.

The King has approved the restoration of the under-mentioned officer from the Temporary Half-pay List to the Active List:—Capt. G. L. C. Little.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 6882 births and 6725 deaths were registered during the week ended Saturday, Dec. 16th. The annual rate of mortality, which had increased from 13.0 to 17.8 per 1000 in the four preceding weeks, further rose in the week under notice to 20.3 per 1000 of their aggregate civil population estimated at 17,312,295 persons for the year 1915. During the first eleven weeks of the current quarter the mean annual death-rate in these towns averaged 14.3, against 14.8 per 1000 in London. Among the several towns the death-rate during the week ranged from 9.5 in Hornsey, 9.7 in Rhondda, 10.7 in West Bromwich, 11.0 in Hastings, and 11.1 in Enfield, to 25.5 in York, 26.1 in Walsall, 26.7 in Bournemouth, 27.6 in Rotherham, and 29.5 in Brighton.

The 6725 deaths from all causes were 813 in excess of the number in the previous week, and included 230 which were referred to the principal epidemic diseases, against 228 and

226 in the two preceding weeks. Of these 230 deaths, 82 resulted from infantile diarrhoeal diseases, 61 from diphtheria, 50 from measles, 18 from whooping-cough, 12 from scarlet fever, and 7 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 0.7 per 1000, and coincided with that recorded in each of the two preceding weeks. The deaths of infants (under 2 years) from diarrhoea and enteritis, which had declined from 477 to 83 in the 13 preceding weeks, numbered 82, and included 23 in London, 5 each in Sheffield and Liverpool, and 4 in Leeds. The deaths referred to diphtheria, which had been 45, 50, and 47 in the three preceding weeks, rose to 61, of which 15 occurred in London and 4 each in Birmingham, Liverpool, and St. Helens. The fatal cases of measles, which had been 29, 47, and 56 in the three preceding weeks, fell to 50, and included 17 in London, 9 in Liverpool, 4 in East Ham, and 3 each in Edmonton and Coventry. The deaths attributed to whooping-cough, which had increased from 12 to 23 in the four preceding weeks, fell to 18, of which 5 were registered in London and 1 in Stoke-on-Trent. The deaths referred to scarlet fever, which had been 6, 7, and 8 in the three preceding weeks, further rose to 12, and included 3 in Liverpool and 2 in Leicester. The fatal cases of enteric fever, which had been 11, 4, and 9 in the three preceding weeks, fell to 7, and included 2 in Huddersfield.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had declined from 1171 to 1047 in the five preceding weeks, further fell to 1012 on Saturday last; 100 new cases were admitted during the week, against 120, 120, and 103 in the three preceding weeks. The cases of diphtheria numbered 1473, against 1584, 1550, and 1513 at the end of the three preceding weeks; 158 new cases were admitted, against 195, 171, and 169 in the three preceding weeks. The 1810 deaths from all causes in London were 127 above the number in the previous week, and corresponded to an annual rate of 21.9. The deaths referred to diseases of the respiratory system, which had steadily increased from 132 to 400 in the eight preceding weeks, further rose to 524 in the week under notice. The deaths from influenza numbered 81, against 41 and 55 in the two preceding weeks.

Of the 6725 deaths from all causes in the 96 towns, 219 resulted from violence, 484 were the subject of coroners' inquests, and 1857 occurred in public institutions. The causes of 75, or 1.1 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Sheffield, Bristol, West Ham, Bradford, Nottingham, and in 62 other smaller towns. Of the 75 uncertified causes, 17 were registered in Birmingham, 15 in Liverpool, 4 each in London and Gateshead, and 3 each in Dudley and Newcastle-on-Tyne.

HEALTH OF IRISH TOWNS.

In the registration area of Dublin 176 births and 191 deaths were registered during the week ended Saturday, Dec. 16th. The annual rate of mortality, which had been 20.1, 17.7, and 20.5 per 1000 in the three preceding weeks, rose to 25.1 in the week under notice, against corresponding rates of 21.9 and 18.4 per 1000 in London and Glasgow respectively.

The 191 deaths at all ages included 29 of infants under 1 year and 65 of persons aged 65 years and upwards. Four deaths were referred to infantile diarrhoeal diseases, 3 to scarlet fever, 2 to enteric fever, and 1 to diphtheria. The causes of 10 deaths were uncertified, and those of 5 others were the subject of coroners' inquests, while 62, or 32 per cent., of the total deaths occurred in public institutions.

During the same period 125 births and 142 deaths were registered in the city of Belfast. The deaths corresponded to an annual rate of 19.0, or 4.0 per 1000 above that recorded in the previous week, and included 14 of infants under 1 year and 44 of persons aged 65 years and upwards. Seven deaths were referred to infantile diarrhoeal diseases, 2 to measles, and 1 each to enteric fever, scarlet fever, whooping-cough, and diphtheria. The causes of 5 deaths were the subject of coroners' inquests, and those of 4 others were uncertified, while 44 of the total deaths occurred in public institutions.

MEDICAL ENTOMOLOGY OF SALONIKA.—Mr

Malcolm E. MacGregor, of the Wellcome Bureau of Scientific Research, will exhibit to medical officers and others interested in the pamphlet issued from the bureau on the "Medical Entomology of Salonika," by Temporary Lieutenant-Colonel Andrew Balfour, C.M.G., R.A.M.C., actual specimens of the insects described in the pamphlet, and will further outline their life-history and the methods of destroying them. Between the hours of 10 A.M. and 4 P.M. on the week days, excepting Saturdays, the Museum of the Bureau, 10, Henrietta-street, Cavendish-square, will be available for this purpose.

Obituary.

SIR FREDERIC S. EVE, F.R.C.S. ENG.,
TEMPORARY LIEUTENANT-COLONEL, R.A.M.C.; CONSULTING SURGEON,
EASTERN COMMAND, AND TO THE LONDON HOSPITAL AND
PRINCESS HENRY OF BATTENBERG'S HOSPITAL.

THE death of Sir Frederic Eve, which occurred on Dec. 15th, came with tragic suddenness, as he was seized with pneumonia only three or four days before the fatal issue. On the outbreak of the war Sir Frederic Eve, with other members of the London Hospital staff, took up work at the military hospital in Chelsea. After serving there for some time and being promoted in rank, he left it to become consultant to the military hospitals in the Eastern Counties. His new duties entailed frequent and long journeys, and it is probable that during one of these he contracted his fatal illness.

Born in 1853, son of the late William Eve, of North Ockenden, Essex, Frederic Samuel Eve entered St. Bartholomew's Hospital as a student about the time (1871) when Sir James Paget retired from active duty, and he followed the same course of pathological work with ardour and success. As curator of the museum at St. Bartholomew's he brought out in 1882 the catalogue of that fine collection. The year before this he became pathological curator in the Royal College of Surgeons of England, being the first to hold this appointment, and he continued to work in the Museum at Lincoln's Inn Fields until 1890. To the College of Surgeons it was important to have as curator a surgeon engaged in active hospital work, one who knew the problems which were specially engaging the surgical world and who would help to supply the Museum with specimens directly relating to them. On the other hand, the unique facilities for observing and working out rare and interesting cases provided by these two pathological appointments were of the utmost value to Frederic Eve. Like Sir James Paget, his early friend and teacher, he was especially attracted to the investigation of tumours, though his best work was by no means confined to this branch of pathology. On the subject of surgical tuberculosis, diseases of bones and joints, certain fractures and dislocations, and the abdominal viscera, he published original papers which advanced knowledge and will for long be consulted. As Erasmus Wilson lecturer during several years (1882-83-84), he brought forward his work on tumours, especially those of the jaws, in which he established the malignant nature of a form of cystic tumour involving these bones. But his first important paper, read before the Royal Medical and Chirurgical Society in 1880, dealt with the subject of direct dorsal dislocation of the hip. This early paper was typical of all Frederic Eve's work, for it gave in clear, concise language views resulting from his own research; where they differed from those advanced by others the contrast was strongly asserted. The paper was not only well written, but well illustrated; further, the foundation of the paper was pathological, and this is true of nearly all his very numerous publications up to his recent Bradshaw Lecture¹ on Hemorrhagic and Chronic Pancreatitis. In 1883 a surgical registrar was required at the London Hospital, and Frederic Eve took the decisive step of severing his connexion with St. Bartholomew's and was

elected without opposition. After he had served in his new post for only a year an opening occurred on the staff. After a strenuous and very close contest he was elected assistant surgeon, and he remained associated with the London Hospital until his resignation from the staff in December, 1914.

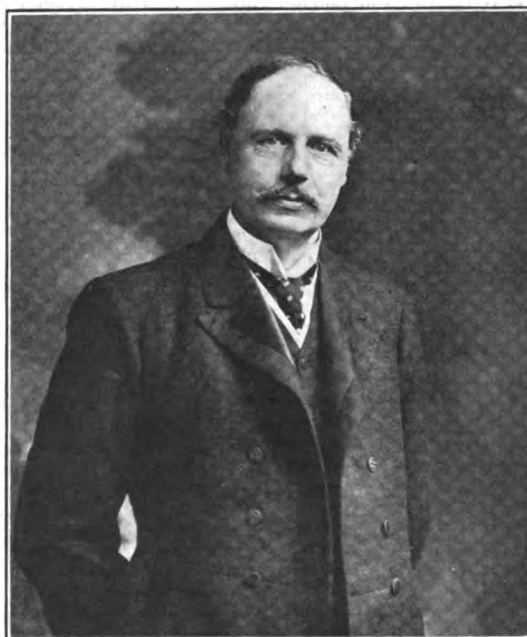
Mr. Jonathan Hutchinson, who writes this obituary notice as Sir Frederic Eve's colleague and friend for nearly 30 years, says: I know that he was a bold and brilliant operator and a most successful teacher in the wards. With the exception of the lectureship on surgical pathology for a few years, he held none of the special teaching posts at the London Hospital, but was for a time ophthalmic surgeon until the inevitable separation between ophthalmic and general surgical work came to him as to others. He performed his full share of work on the Medical Council of the hospital and on the College Board during the arduous years when both medical college and hospital were steadily developing against grave financial and other obstacles to their present high position. His powers of clinical investigation and teaching were of the utmost service to the students of the hospital. But above all his great success in these directions, as well as in private practice, it is as a surgeon-pathologist that Sir Frederic Eve

won renown, and by his work in surgical pathology, as indeed he himself would have desired, his memory will be preserved in our profession.

Eve's contributions to surgical literature are numerous. In the Transactions of the Pathological Society will be found no less than 60 papers by him, and it is difficult to select out of so large a number the most valuable ones. Several related to diseases of animals, others to rare forms of tumours, such as those of the great omentum, renal growths containing combined muscle and sarcoma tissue, endotheliomata of the brain, cystic tumours of the testis, congenital hypertrophy (giant growth) of the extremities, sarcoma of the tongue. One paper of particular interest illustrated that very rare disease, psorospermial cysts of the ureteric lining membrane. Another proved that a form of chronic enlargement of lymphatic glands without any caseation was really of tuberculous nature—a valuable and

original observation. Besides this mass of pathological work Eve contributed no fewer than 15 papers to the Clinical Society's Transactions, and six to those of the Medical Society and the Royal Society of Medicine. Especial attention may be drawn to those describing enormous cystic dilatation of the common bile-duct (Clin. Soc., 1906), traumatic myositis ossificans (ibid., 1899), arthrectomy of the knee for tubercle with almost perfect recovery of movements in the joint (ibid., 1901), two cases of mesenteric cyst in children with dissection and illustrations (Med. Chir. Trans., 1898), and angioma of muscles and synovial membrane. Of late years Eve was especially interested in abdominal surgery, and of his papers on this subject we may select one on resection of the large intestine, as it included a review of tuberculous disease of the cæcum simulating appendicitis, a condition which has led most surgeons at one time or other into serious errors of diagnosis and treatment. It is doubtful whether his advocacy of gastro-plication or of operations for fixing up the prolapsed stomach will receive much support, but every paper from Eve's pen bears evidence of his industry, scientific acumen, and wide pathological knowledge. In all the facts and deductions are admirably arranged and advanced, all are worthy of the author.

Some allusion must here be made, however briefly and imperfectly, to Sir Frederic Eve's official work for the Royal



SIR FREDERIC S. EVE, F.R.C.S. ENG.

¹ THE LANCET, 1915, i., 1.

College of Surgeons of England. Apart from his long tenure of the Curatorship in the Museum and his Erasmus Wilson and Bradshaw lectures, he served for nine years on the Examining Board (1902 to 1911). Eve was an ideal surgical examiner, always considerate to the candidates and scrupulously fair. In 1904 he was elected on to the Council, and at the time of his death was one of the Vice-Presidents. Few persons realise the very great amount of time and labour required from the holders of these posts, and Eve left nothing undone during the term of his office. In all, his work at the College covered the long period of 24 years, and he was justly proud of his high position on its Council, which no one could have better earned. By his colleagues there and at the London Hospital, as well as by many other friends in the profession, his loss will be deplored and his memory will be honoured, and the deepest sympathy is felt for Lady Eve in her bereavement.

Frederic Eve was knighted in 1911. He leaves one son, now serving in France, and one daughter.

A memorial service was held on Wednesday last at All Saints', Margaret-street, which was attended by a large number of medical and official colleagues and friends, including Sir W. Watson Cheyne, President of the Royal College of Surgeons of England, Lieut.-Colonel Yolland, of the Eastern Command, Professor W. Wright, of the London Hospital, and Dr. A. J. Rice-Oxley, representing H.R.H. Princess Henry of Battenberg.

Correspondence.

"Audi alteram partem."

THE PROHIBITION OF ALCOHOLIC BEVERAGES.

To the Editor of THE LANCET.

SIR,—You recently considered the memorial to the Government signed by a thousand thoughtful officers, and business and professional men, asking the Government to suspend all drink licences for the period of the war. That request is so important, I beg you will let me draw attention to it again. The memorial states that, even where it does not cause drunkenness, alcohol by "the constant sapping of man's energies" endangers the supply of munitions. Anyone might be excused for thinking that such a pronouncement from so wise a body of men would cause the munition workers as a body to drop all drinking. But we in the medical profession will be less sanguine, for we know that we have been telling people for years that those who drink live fewer years than do teetotallers, yet that people continue to drink. They prefer a more cheerful life and shoot Niagara with eyes wilfully closed. They will not take scientific precautions for themselves; are they likely to take them for the country? Drink makes them more sociable and their friends more interesting, but they feel, unconsciously perhaps, that it makes them less able to take care of themselves, and that they should only drink with their friends, not with strangers, and still less with enemies about. (Does not that apply to the nation now?)

Drink is an anæsthetic which relieves the pain of disappointed love, of poverty, of indigestion, and, above all, it makes people feel comfortable and better pleased with themselves. Why—men ask—should we not drink? That wine is a mocker they do not frankly believe. It has before now lessened their self-control, blunted their perceptions, and impaired their judgment; it has made them less alert and less efficient at their work; all these things are proved by the chronograph, but of none of them will the obstinate and selfish moderate drinker be convinced. But we members of a scientific profession, we know they are all true. As men of the world, too, we know that nothing like the whole of the damage done by drink has been brought home to drinking. How few are the accidents unattended by a whisper about drink as the cause? How often, when some accident has happened, is the suggestion about its author heard in the mess—"He does himself pretty well"? And is it not just as frequently true that when a formal inquiry is being held most particular

endeavour is made by everyone to keep any suggestion about alcohol from the official notice of the people who are inquiring.

Why is everyone so friendly to drinkers? I remember a very distinguished officer to whom I mentioned the death of A, a brother officer with whom we had both served at different times in the same ship. "He drank a bit," said I. "Yes," said the other, "but I could never catch him; everybody shielded him." And I recalled to myself an occasion when A was "under the influence," and some half-dozen officers stood round him to shield him from possible notice by his (and our) captain near by. Yet his falling might have drowned us any night.

Drink being known to be so frequent a cause of accidents and delay to work, and it having been stated by authority that we are fighting three enemies, Germany, Austria, and drink, of which the most deadly is drink, surely it is nothing but our British want of logic that keeps open the licensed houses which the memorialists desire closed throughout this war. Inadvisable in peace-time, indulgence in alcohol is suicide now. The moderate drinker may easily pass over his limit by a chance any day. And think of the responsibilities to-day, especially those of public servants, a captain in the trenches, the commander of a destroyer, a Cabinet Minister. Why should they drink? To compensate them for the strain of their anxieties? It is pleasant; it is an anæsthetic. Will the enjoyment of that small sensuous pleasure make up to them or will it compensate us, their employers or their beneficiaries, for perceptions delayed, decisions slowed, one gunfire wasted, a ship lost, an opportunity unseized? But of course it would be most unfair to stop naval officers' grog while we went on drinking grog ourselves, or to keep it from the soldiers while allowing it to the Cabinet. Wherefore, I submit it is most important that the Government, determined to spare no effort to win the war, should accede to the prayer of the memorial and close all licensed houses till the war ends. Such is undoubtedly the teaching of science.

I am, Sir, yours faithfully,

Naval and Military Club, Dec. 5th, 1916.

W. E. HOME,
Fleet Surgeon, R.N.

THE USE OF X RAYS DURING OPERATION FOR FOREIGN BODIES.

To the Editor of THE LANCET.

SIR,—I have found the following technique invariably successful in cases of removal of metallic foreign bodies, and I adopt this procedure in all cases, however simple. The X ray room is turned into a temporary operating theatre. The patient prepared for operation is placed on the X ray table with the tube underneath. The tube is then centralised under the part to be operated on. The room is then darkened and the foreign body is localised by the screen in the ordinary way in order to see where the incision should be made. Lights are then turned up. The surgeon washes up and prepares for operation while the patient is being anæsthetised. One nurse is told off to turn the light on and off. Another nurse takes charge of the screen, and another nurse or the X ray operator controls the switch-board for the X ray apparatus. The operation is now commenced. If the foreign body is not immediately found the operator has merely to ask for X rays. Without further instructions, each assistant does her allotted part and the operation proceeds in the dark with the shadow of the instruments and the foreign body getting closer together. This may only require a few seconds.

In a recent operation, where I was searching for a piece of shrapnel about as big as my little finger-nail (and as thin) in the buttock very near the great sciatic nerve and which was causing intense sciatica, I had to ask for the rays five or six times, and each time I had merely to say, "X rays, please," and "Lights, please," alternately, and I was able to get the piece out with very little damage to tissues. A month previously I had failed to find it in the operating theatre, though I had myself spent a long time in "marking" it down. I now adopt this method for all cases.

There are, of course, a few drawbacks to the method, the principal one being the want of space in many X ray rooms. So many hospitals when installing X rays have put their apparatus into such small rooms. This is not only greatly

against turning the X ray room into a temporary operating theatre, but it is a great source of inconvenience in ordinary X ray work. Other drawbacks, such as washing appliances and general disarrangement of the theatre appliances, can, of course, only be overcome by willing co-operation of the staff. The anaesthetist may grumble too, but the time he is left in the dark is very short and it is always up to him to call for lights at any moment if he wishes.

In conclusion, I must mention that in the V.A.D. Yacht Club Hospital our success has been due to the generosity of Mr. Leopold Cust and the British Red Cross Society, who have given and installed the X ray apparatus in quite a large room, and to the willing co-operation of the commandant and the staff.—I am, Sir, yours faithfully,

STEPHEN M. LAWRENCE, M.D., B.S. Lond.,

Surgeon to Gravesend V.A.D. Yacht Club Hospital and Assistant Surgeon and Radiographer to Gravesend General Hospital.
Dec. 16th, 1916.

THE MOBILISATION OF THE MEDICAL PROFESSION.

To the Editor of THE LANCET.

SIR,—May I be permitted to enter the most vigorous protest against the attitude suggested by Dr. Major Greenwood? It has been sufficiently obvious for some time that the medical profession is in an exceptional position among professions. In a word, more medical men are wanted for the Army. We have had every chance of coming forward voluntarily and the response has been splendid, but, still, the well-recognised economic considerations of medical practice hinder a response as full as is required. These considerations even hinder the Government from calling up doctors of military age until they have acquired authority to compensate resulting deficiencies in the areas from which these men are called. No other interpretation of the fact that these doctors are wanted and still not called up is possible.

If the voluntary effort is not enough, one naturally looks for, and expects, a compulsory levy. And against this Dr. Major Greenwood protests on the amazing grounds that it would be, he considers, contrary to the "dignity and honour" of the profession. Anything less honourable and less dignified than "the strongest opposition" to any step which a War Government may consider necessary can hardly be conceived. That our interests should be looked after as well as possible (they will need it) is agreed, but Dr. Greenwood will lead a crusade of one against the utmost demands genuinely required of the profession. Surely our present record of free work and sacrifice is eloquent of that, a record not approached by any other class. Incidentally, may I remark that I do think that the profession should long ago have thrashed out a plan for its mobilisation—individual members I know have such plans, but our leaders (?) are silent.—I am, Sir, yours faithfully,

Sevenoaks, Kent, Dec. 18th, 1916. GORDON WARD, M.D. Lond.

To the Editor of THE LANCET.

SIR,—I sincerely trust and believe that Dr. Major Greenwood mistakes and misrepresents the profession in his letter in your issue of Dec. 16th. The question is not whether we are doing or have done more than other people or more than our share, but whether we are doing our utmost. If, by mobilisation or rearrangement, we can do more or better work for the fighting men or the nation the sooner it comes the better. For individuals or classes to look round to see if they by chance are doing more than their share is, to my mind, the negation of patriotism. If equality of sacrifice is to be enforced, where is the firing line—in convalescent homes?

I am, Sir, yours faithfully,

Watford, Dec. 18th, 1916.

J. C. BARKER.

TICKLING COUGH.

To the Editor of THE LANCET.

SIR,—Mr. T. Mark Hovell, in his remarks as President of the Laryngological Section of the Royal Society of Medicine, was most interestingly anent his remedies for "tickling cough," and may I call attention to the efficiency of codeia in relieving this distressing complaint following on certain conditions of ill-health. Only a few of us have any knowledge of trichloroacetic acid, but all of us have experience of

codeia in various ways. For many years past I have been in the habit of prescribing codeia in cases of "tickling cough" following on influenza, tuberculous laryngitis, &c., and rarely does it fail. Mr. Hovell remarks that all diseases of the throat are not of local origin, and in this respect one has to remember the wide connexions of the vagus nerve and try to apply the appropriate treatment. In prescribing for "tickling cough," as following on or in association with influenza, &c., the formula I use is as follows:—

| | | | | | |
|--------------------|-----|-----|-----|-----|----------|
| Codein. | ... | ... | ... | ... | gr. iss. |
| A. citric. | ... | ... | ... | ... | gr. v. |
| Syr. pruni virgin. | ... | ... | ... | ... | ℥ iv. |
| Syr. tolu | ... | ... | ... | ... | ℥ iv. |
| Aq. | ... | ... | ... | ... | ℥ iv. |

A teaspoonful to be sipped occasionally.

CASE 1.—A clerk in holy orders was ordered off to South Africa some 25 years ago by a London specialist as suffering from consumption. He arrived home in the course of two years, and resumed his work as a curate. Twenty years ago he came under my care supposed to be suffering from whooping-cough. The cough was tickling and in every way most distressing; it lacked the peculiar whoop, but in many other respects it was suggestive of whooping-cough. Auscultation of the chest and examination of the sputa suggested influenza. Codeine soon relieved the cough, and in a short while he became quite well. He is now (at 50) a hard-worked vicar, and has been such for the past 16 years or more. I may also mention that on marrying he was accepted as first class for life assurance.

CASE 2.—A married lady, aged 50, from Scotland, came under my care last winter supposed to be suffering from tubercular laryngitis. She was anæmic and had lost flesh; temperature 100° F.; T.B. absent; little or no expectoration. Auscultation revealed moist sounds generally; she had a tickling and most distressing cough, which was incessant in the recumbent position, each paroxysm being quickly followed by another and affording no relief, hence the night was almost sleepless. Codeine soon relieved the cough and in other respects she was not long in picking up and returned to her usual family avocations. Her condition was undoubtedly due to influenza.

I am, Sir, yours faithfully,

Bournemouth, Dec. 11th, 1916.

A. KINSEY-MORGAN.

PATHOLOGY OF CANCER.

To the Editor of THE LANCET.

SIR,—In your report of the papers by Professor S. G. Shattock and Mr. L. S. Dudgeon on the above subject before the Royal Society of Medicine last week no reference was made to the discussion. In the absence of the President of the Section of Pathology I occupied the chair at the meeting, and wish to correct the impression which the report may produce that their views passed without criticism from me. I pointed out that the mediastinal and pulmonary growths are conditions common in old mice and of doubtful malignancy. This leaves one undoubted malignant tumour out of four animals experimented upon. This is not an exceptional frequency in mice of two years of age or over. Hence, in my opinion, it is unnecessary to assume that feeding with transplanted tumours had anything to do with the result.

I am, Sir, yours faithfully,

J. A. MURRAY.

Imperial Cancer Research Fund, Dec. 18th, 1916.

A SMALL outbreak of dysentery has occurred at Lethanhill, a mining village in the county of Ayr. Nine cases have been reported with three deaths. The county medical officer, Dr. C. R. Macdonald, attributes the outbreak to infection from a discharged soldier.

LITERARY INTELLIGENCE.—The new General Catalogue of the Oxford University Press (Humphrey Milford) is dated November, 1916, and is divided into a subject catalogue comprising 480 pages and a comprehensive alphabetical index of authors, editors, and titles. The subject-catalogue gives such bibliographical details as size, number of pages, date of publication, and in some cases a specimen illustration. Section V., which deals with natural science and medicine, covers 32 pages, and contains a complete list of the Oxford Medical Publications. It seems probable, a prefatory note states, that the present issue of the catalogue will be for some time current, but lists of books subsequently published will be gathered from time to time in a "cumulative" supplement.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Died of Wounds.

Capt. R. F. Hughes, Australian Army Medical Corps.

Wounded.

Capt. H. R. Smith, R.A.M.C., attached Royal Lancaster Regiment.

Capt. J. D. MacCormack, M.C., R.A.M.C.

THE CENTRAL MEDICAL WAR COMMITTEE.

A meeting of the Central Medical War Committee was held at the offices of the British Medical Association on Wednesday, Dec. 20th, when a report made by the Executive Subcommittee was adopted dealing with the calls for medical officers that have been made on different areas. The document also considered the method in which further calls will be made. The report was accompanied by an elaborate analysis of the conditions in each particular area, showing its population by the 1911 Census, the total number of general practitioners, consultants, and whole-time medical officers therein, the number of practitioners under 41 years of age, the number between the ages of 41 and 45, the resulting number of men who might be available for service in each district, and the number of calls to be made. An interesting debate ensued, in which the report was adopted by the Committee unanimously, as being the way in which, on general grounds, a fair assessment could be made. The figures presented fallacies on the surface which proved, in the main, capable of complete explanation. Sometimes, for example, fewer calls appeared to be made from larger populations, but on examination it could be shown that one city contained many *à la suite* officers, another was the small urban centre of a large rural district, and in another all the men remaining were over age. The report recommended that calls should be made on the various areas in accordance with the information.

A debate followed upon the question of the mobilisation of the medical profession, with the result that it was decided to send a deputation to make representations to the proper Government department.

THE CANADIAN ARMY MEDICAL SERVICE.

Our Canadian correspondent writes: During the past few weeks we have little but talk about our Army medical services, and in particular about the surgical and hospital part of the services abroad, and this not only among medical men, in the medical press and at medical gatherings, but very widely in the public press also. Extracts and abstracts have been published of a special investigation by Colonel Herbert A. Bruce, of Toronto, who was deputed by Sir Sam Hughes, recently-resigned Minister of Militia for Canada, to make a report. The announcement that Surgeon-General Guy Carleton Jones, Director-General, was returning to Canada; that Colonel Bruce was temporarily acting in that capacity; that Sir William Osler and others had resigned in sympathy with General Jones; and the subsequent statement that General Jones was reinstated by the Premier, Sir Robert Borden—these and other items of news came hard on each other's heels, and kept medical men in suspense as to what was coming next. It was well known in Canada that General Jones was an expert in army medical work, and that Colonel Bruce was equally expert in surgery and hospital work; and surprise was felt that two such eminent men in the Canadian medical profession could not both be used for the best good of the Canadian soldier, or of the British soldier, wherever he was to be found. That appears to be the outstanding feeling of the medical profession in Canada, which has to form judgments far away from the scene of action, and with only a limited second-hand knowledge to base them upon. But quite apart from personal bias, the medical profession in Canada, and the public generally, will do well to look the facts squarely in the face; and these cold facts are furnished in the recent casualty lists from Ottawa, dated Nov. 13th, 1916. The

total casualties now number over 60,000, classified as follows: Killed in action, 9457; died of wounds, 3477; died of sickness, 490; presumed dead, 1027; wounded, 43,245; missing, 2245. This list does not include prisoners, the omission of whom is immaterial, as they do not concern the work of Canadian hospitals and surgeons abroad. The most striking feature of this report, and one which readily appeals to the lay mind, is the very small number of deaths from sickness—490, out of a total of 60,000 casualties, or less than 1 per cent. Surely this points to clever scientific work on the part both of sanitary and medical staff. It has been stated on responsible authority that only one Canadian soldier has died from typhoid fever, and that he had absolutely refused inoculation, although inoculation is compulsory in the Canadian overseas forces. Canada has already raised an army of 370,000 for overseas service, and if it is fair to assume that 200,000 or 250,000 have been on the Western battle front, an army equal to the whole British Expeditionary Force in the South African War, then there is good reason for congratulation at the work of the medical services; for typhoid fever, we know, claimed 8022 lives in that campaign, to say nothing of the 19,000 men who were invalided home and the other casualties from dysentery and pneumonia. The question which necessarily occurs to Canadian medical men at home is, Have our Canadian surgeons been securing the best results in returning wounded soldiers to the trenches? Without first-hand knowledge this cannot be answered. But that is the question which the authorities should keep steadily in mind, for if our best surgeons volunteer for service their services will surely be gladly accepted. The general feeling in Canada, as in all other parts of the British Empire, is that our soldiers must receive the best skill and experience which Canada has to offer. They must be well taken care of, not only in the hospitals abroad, but after they return to Canada as well. Nothing else will satisfy the profession of Canada or the public of the Dominion at large. In union there is strength; and this motto applies to the medical services as to all other branches. Our authorities should diligently examine and determine—the higher up the more pertinent—whether the very best medical men are in command, not only in Canadian headquarters in England, but in Ottawa as well.

PHYSICAL TREATMENT FOR DISABLED SOLDIERS.

We have received an interesting report from the War Service Committee of the Section of Balneology and Climatology of the Royal Society of Medicine, of which Dr. Septimus Sunderland is chairman and Dr. J. Campbell McClure and Dr. R. Fortescue Fox honorary secretaries. The report is a continuation of that published in THE LANCET of Feb. 5th, p. 311, and states that the Section of Balneology has consistently pressed for the utilisation, not only of hydrological treatment, but of all associated physical methods—electrical, mechanical, and otherwise. In the committee's opinion, an adequate installation of remedial baths must include (1) sedative treatment as in the pool bath; (2) tonic treatment as in the douche and effervescent bath; (3) local treatment for disabled limbs as in the whirlpool bath. If the best results are to be obtained they believe it is necessary to use all three classes of treatment, and they have pressed this conclusion upon the Army medical authorities. They also regard an adequate training in the science and practice of hydrology as indispensable to those who are to conduct this remedial treatment. The following points have emerged in the course of recent work: (1) Experience has shown that hydrological remedies have both physical and psychical effect; (2) the association of treatment and training is essential in the later stages of convalescence; (3) mechanical treatment has real value as a stepping-stone to occupational re-education; (4) accurate periodic measurement of muscular defect is essential as a guide to physical treatment; (5) the value has been proved of the sedative pool bath in cases of recent shell shock, insomnia, and disordered heart action; (6) rapid relief of disablement follows the use of the whirlpool bath in cases where other methods have failed. The committee express their conviction that the disability, both surgical and medical, of large numbers of soldiers is definitely amenable to physical remedies, and they plead for an adequate and continuous physical treatment of such cases.

OBITUARY OF THE WAR.

IAN ALEXANDER MURRAY CLARKE, M.B.,
CH. B. EDIN.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain I. A. M. Clarke, who was killed in action on Nov. 16th, was the elder son of the Rev. Dr. Clarke, of Moss-green, Crossgates, Fife. Educated at Dunfermline High



School and Edinburgh University, he was a fifth-year medical student when war broke out and joined the Red Cross in September, 1914, spending six months at Rouen. He then returned to take his qualifying examination in July, 1915, receiving a commission in the R.A.M.C. and becoming attached first to a field ambulance and then as medical officer to the Dorsetshire Regiment. He was invalided home for trench fever, returned to the front, and was killed by a shell.

Letters from his commanding officer and others speak of Captain Clarke's untiring energy and cheerful disposition, which made him a popular and efficient medical officer. In his own last letter he anticipated being killed in action and spoke of it without personal regret.

NEIL MURPHY GAVIN, F.R.C.S. EDIN.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant N. M. Gavin, who was accidentally killed on active service on March 12th, at the age of 42, was educated at Stirling High School, leaving when only 14 to enter business. Apprenticed at 16 in Glasgow, he tried to live on his meagre salary, and then conceived the intention of becoming a medical missionary. The opportunity, however, did not come until six years later, when he joined the Edinburgh Medical Missionary Society and started on his medical course in Edinburgh. Qualifying in 1901, he spent some months as assistant in a country practice, and in the following year became F.R.C.S. Edin. In the autumn of 1902 he sailed for India, having been appointed to a station at Anand, in the northern part of the Bombay



Presidency, under the Irish Presbyterian Church. He married in the following year Muriel Stevenson, M.B., Ch.B. Edin., daughter of the missionary, Dr. Fleming Stevenson, and in their hands the medical work of the mission steadily grew during a period of 13 years. Mr. Neil Gavin then volunteered for service with the R.A.M.C., received his commission, and after some work at a German Prisoners' Camp, became medical officer

to a field ambulance in France. In the course of his duties he was thrown by a bolting horse, sustaining a compound fracture of the base of the skull, and died without regaining consciousness.

The story of Mr. Gavin's work in India is told in a little booklet written by his wife, entitled "The Doctor Sahib," published by the Sabbath School Society for Ireland (Belfast). The success of the medical work at Anand was such that instead of the small dispensary for women and children which he founded on arriving, "when he left, after 13 years, he left

behind him a fully equipped and up-to-date hospital, with 70 beds, a staff of trained native Christian assistants, an out-patient attendance of close on 30,000, and an annual operation list of 1000." At the same time the caste difficulty was gradually solved, and the hospital sometimes contained all castes lying side by side in the same ward. The personal qualities which contributed to this result must have been telling ones, and are stated thus in the booklet: "His greatest power lay in his gentleness and his sympathy. He was always helping somebody, though he thought so little of himself; for behind the tender chivalry and merry banter there was a depth and strength of character, and no one turned to him in vain."

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Second Lieut. C. B. Major, East Yorkshire Regiment, second son of Capt. A. C. Major, R.A.M.C.

Lieut. P. Haslock, R.N., second son of the late Dr. H. Haslock, of Summersdale, Chichester.

MALARIA AND ITS TREATMENT: EXPERIENCE OF AN AUSTRALIAN EXPEDITION.

In August, 1914, after war had been declared, a military expedition left Australia for New Guinea and other German possessions in the East Indian Archipelago. During the operations a number of the troops contracted malaria, for which they were treated on the spot by quinine; but in many of them the malady recurred on their return to Australia, and for this they were admitted to various local hospitals. Some 30 of these cases which had been treated in these institutions with comparatively large doses of quinine nevertheless continued to have recurrences of the disease, and for this they were sent to be specially treated in the tropical ward of the Townsville Hospital, where they came under the observation of Dr. A. Breinl and Dr. H. Priestly, of the Australian Institute of Tropical Medicine. These authorities have now published a note on the subject in the *Medical Journal of Australia*, giving some details of the treatment employed. This, it appears, consisted in the administration of 30 grains of quinine hydrochloride, or bisulphate, of quinine daily in three doses for three to four weeks, followed up by 30-grains every other day for a further period of two weeks and 20 grains every other day for two more weeks, and then 20 grains weekly for at least another two months. This treatment may seem at first rather severe and prolonged, but it is contended that malaria, like other protozoal diseases—e.g., syphilis and sleeping sickness—is an exceedingly chronic affection requiring protracted treatment. Moreover, it was found that the malarial parasites from New Guinea displayed unusual resistance to the action of quinine. In this connexion Dr. Breinl and Dr. Priestly took into consideration the fact that a combined treatment by means of two different drugs, each of which acts as a parasiticide, had been found of service in syphilis, where arsenic and mercury, and in sleeping sickness, where arsenic and antimony had proved of great value. They therefore tried a compound of organic arsenic in the refractory cases, injecting 3 grains of soamin under the skin on four successive days and repeating the course three times at weekly intervals with satisfactory results. It is well known that trypanosomes may become resistant to arsenic in certain forms, especially if, in mild infections, treatment with insufficient doses has been continued for long periods. In these rare instances a dose of an arsenical compound toxic to the animal does not destroy the parasites in the peripheral circulation, but antimony salts in these cases show the full therapeutic effect upon the trypanosomes. Whatever the explanation may be, it is an undoubted fact that sometimes malarial parasites exhibit a similar behaviour in respect of quinine; it has been proved that in certain cases, after prolonged but insufficient treatment, even large doses of quinine do not destroy the malarial parasites in the peripheral circulation. The complicated life-history of the parasite, its adaptability to the changed conditions brought about by the reaction of the host against the parasitic invasion on the one hand, and insufficient quinine administration on the other, make it clear, in the opinion of Dr. Breinl and Dr. Priestly, that the treatment of malaria must be adapted to the individual, to the type of his infection, its

severity, and his susceptibility to quinine. They conclude that a cure can only be obtained by the discreet administration of large doses of quinine over a prolonged period, and may be facilitated by the use of organic arsenical preparations.

GIFTS TO THE RED CROSS SOCIETY.—The Red Cross Gift House, Pall Mall, which temporarily closed its doors on Dec. 16th, has raised during the past eight months £16,000 for the Red Cross Society and Order of St. John. Sir Ernest Cassel has sent to the chairman of the Joint Committee of the Red Cross Society and the Order of St. John his fourth gift of £25,000 for the sick and wounded. On condition that nine women will each give £1000 to the funds of the British Red Cross Society and the Order of St. John, Mrs. Frank H. Holder, of Queen Anne's Mansions, has offered to add another £1000 in order to make up a women's gift of £10,000. A similar conditional but anonymous offer awaits nine donors of £1000 each for its fulfilment. The members of the Union of London Cab, Omnibus, and Tramway Car Workers have presented the Red Cross Society and Order of St. John with an ambulance car which is intended for London war work. It was stated at the presentation that out of over 33,000 members of the union more than a third were serving with the forces, and that every week there were from 150 to 200 drivers occupied in giving free conveyance to wounded men.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL AND THE WAR.—The demands on the assistance of Queen Charlotte's Lying-in Hospital, Marylebone, during the present year have been greater than ever before, owing to the fact that the hospital is admitting a great number of the wives of our sailors and soldiers, as well as Belgian and other refugees. Since the outbreak of war over 3000 wives of our sailors and soldiers have either been received into the hospital or attended in their own homes. A new (temporary) building adjoining the hospital has been opened for an ante-natal department, and an infant consultation centre is also being established. When so many lives are being laid down in the service of the country it is more than ever necessary to save the children, and Queen Charlotte's Hospital deserves the liberal support of the public to enable it to carry on its increasing and valuable work satisfactorily.

CONVALESCENT HOME FOR WOUNDED OFFICERS IN SIMLA.—The Lady Chelmsford Convalescent Home for 50 sick and wounded officers invalided from Mesopotamia was recently opened in Simla in a house placed by the Nawab of Maler Kotla at the disposal of the Commander-in-Chief in India. Lady Chelmsford, assisted by a committee of ladies, made herself responsible for the internal arrangements. The catering is in the hands of a hotel proprietor, officers being charged at the rate of Rs.2 per diem. Sixty-four officers have already passed through the home.

WAR HOSPITALS.—Mr. and Mrs. Barrow Cadbury have offered Uffculme, Moor Green, Birmingham, to the Society of Friends' Ambulance Unit as a hospital for the accommodation of 100 men.

BATHS FOR SOLDIERS.—Under the descriptive heading "Tubs for Tommies" the Emergency Voluntary Aid Committee of the Empress Club are appealing for funds to supply hot baths for soldiers at the front. The committee have been officially asked to supply 1000 units of baths. Subscriptions may be sent to "Tubs for Tommies Fund," 48, Old Bond-street, London, W.

THE King and Queen visited last week the Freemasons' War Hospital and Masonic Nursing Home, Fulham-road, S.W., and were received by Mr. George F. Marshall (chairman of the Board of Management), Mr. George Cowell, F.R.C.S. (chairman of the Medical Advisory Committee); and Sir Horace Marshall (honorary treasurer).

WAR HOSPITAL MAGAZINES.—The December issue (Christmas and New Year number) of the *Craigleith Hospital Chronicle* is an excellent production which will appeal to all classes. While affording a cheerful hour or so to its readers, it benefits the patients of the hospital in whose interests it is published, as all profits are devoted to extra comforts for the sick and wounded at the 2nd Scottish

General Hospital. The address of the magazine is Craigleith, Edinburgh, and the price is 6d.—No. 12 of *Ration*, the Christmas number of the magazine of the Reading War Hospital, is another publication which should have a wide circulation. It is full of good fun both in picture and print and there are reproductions of the portraits of the retiring commanding officer, Lieut.-Colonel E. A. Hanley, and of his newly appointed successor, Lieut.-Colonel W. J. Maurice. *Ration* can be obtained at the Reading War Hospital, price 2d.

THE Duke of Westminster has given Eaton Hall to the nation as a military hospital for officers for the duration of the war. Provision will be made for 250 beds. Grosvenor House, London, will also become a military hospital.

Medical News.

UNIVERSITY OF OXFORD.—At examinations held recently the following candidates were successful:—

FIRST B.M. EXAMINATION.

Organic Chemistry.—D. B. Pauw, Trinity.

Human Anatomy and Human Physiology.—T. A. Brown, B.A., Exeter; H. H. Cluver, B.A., Hertford; E. G. T. Liddell, Trinity; and J. E. B. Morton, Queen's.

SECOND B.M. EXAMINATION.

Materia Medica and Pharmacology.—H. Burford, B.A., Christ Church; G. Cowie, B.A., University; F. B. Dutton, M.A., Magdalen; R. B. Hervey-Wyatt, B.A., and R. W. Lush, Christ Church; K. A. I. Mackenzie, B.A., Trinity; T. Patterson, B.A., non-collegiate; G. H. Rosedale, B.A., Merton; H. W. Toms, B.A., Jesus; and E. A. Woods, B.A., New College.

Pathology.—E. A. Crook, New College; T. Patterson, non-collegiate; J. J. Savage, B.A., Brasenose; G. K. Stone, Trinity; and J. P. S. Walker, B.A., Oriel.

Forensic Medicine and Public Health.—H. E. Bamber, M.A., Worcester; E. F. Creed, B.A., and R. B. Hervey-Wyatt, B.A., Trinity; K. A. I. Mackenzie, B.A., Christ Church; S. W. F. Underhill, B.A., Brasenose; H. St. H. Vertue, B.A., University; and C. D. Wood, B.A., Queen's.

Medicine, Surgery, and Midwifery.—H. E. Bamber, M.A., Worcester; W. Burridge, M.A., Christ Church; E. F. Creed, B.A., and G. I. Evans, B.A., Trinity; K. A. I. Mackenzie, B.A., Magdalen; G. H. Rosedale, B.A., Merton; S. W. F. Underhill, B.A., Brasenose; S. C. Varley, B.A., St. John's; H. St. H. Vertue, B.A., University; A. L. Watts, B.A., non-collegiate; and C. D. Wood, B.A., Queen's.

UNIVERSITY OF LONDON.—At examinations held recently the following candidates were successful:—

SECOND EXAMINATION FOR MEDICAL DEGREES, PART II.

Enid Margaret Mary Bevan, London (Royal Free Hospital) School of Medicine for Women; Idris Davies, University College, Cardiff; Beryl Dyer, London (Royal Free Hospital) School of Medicine for Women; David Washington Evans, University of Bristol and London Hospital; Dorothy Winifred Gowers and Margaret Hammond, M.A., London (Royal Free Hospital) School of Medicine for Women; Robert David Jones, University of Liverpool and University College; Noel Edward Farnwell Kemm, University of Bristol; Muriel Mercer Kenworthy, London (Royal Free Hospital) School of Medicine for Women; Eugène Henri Léon Leclézio, Guy's Hospital; Baroness Teresa Jadwiga Lesser, London (Royal Free Hospital) School of Medicine for Women; Gerald Edmond MacAlvey, St. Mary's Hospital; Maurice Marcus, London Hospital; Robert Hughes Parry, Middlesex Hospital; Arthur Hywel Richards, St. Mary's Hospital; Joan Margaret Ross, Norah Edith Trouton, and Josephine Leigh Hunt Wallace, London (Royal Free Hospital) School of Medicine for Women; and Reginald Frank White, University of Bristol.

HONORARY (WAR) B.SC.

Lieut. Arthur Frederick Collins, Birkbeck College; Arthur Howard Jay, King's College; 2nd Lieut. Colin McCabe, University College; Stanley Arthur Nickelson and Corporal Thomas Gregory Stamp, East London College; Corporal James Thomas Torrell, Imperial College—Royal College of Science; and Frederick Thomas Walker, Battersea Polytechnic.

UNIVERSITY OF LIVERPOOL.—At examinations held recently the following candidates were successful:—

M.B. AND CH.B., SECOND EXAMINATION.

Part A.—Evelyn D. Brown, W. T. Davies, Dorothy W. Hall, Dorothea E. Hewitt, E. S. Longton, S. D. McAusland, A. Marsh, R. R. B. Roberts, and W. R. Williams.

Part B.—P. E. Gorst (Distinction in *Materia Medica and Pharmacology*), F. G. Latham, E. T. Martin, D. R. Owen, and Frances Weightman.

M.B. AND CH.B., FINAL EXAMINATION.

Part I.—R. A. Cooke, S. G. Evans, Phoebe A. Ince, W. A. Jackson, W. M. Jones, V. Levy, G. A. Mitchell, S. G. Mohamed, F. A. Prosser, W. L. de Silva, G. S. Swan, and H. G. Young.

Part II.—E. H. T. Cummings, A. L. Davies, R. I. Duggie, R. R. Evans, and H. P. Williams.

DIPLOMA IN TROPICAL MEDICINE.

M. Barseghian, H. L. H. Lim, A. L. J. Lim, G. N. Metzger, E. D. Söderström, and Wheeler.

L.D.S., THIRD EXAMINATION.

Part I.—J. A. Baldwin, F. P. Brown, F. Lockwood, and B. W. R. MacNabb.

Part II.—H. V. Fisher and B. W. R. MacNabb.

UNIVERSITY OF MANCHESTER.—At examinations held recently the following candidates were successful:—

FINAL M.B. AND CH.B.

*G. E. Archer, E. R. Gilmore, J. E. Leigh, B. L. Lloyd, *J. A. Pantom, and O. E. Sandiford.

* Distinction in Obstetrics and Diseases of Women.

THIRD M.B. AND CH.B. EXAMINATION.

General Pathology and Morbid Anatomy.—T. H. Almond, Sybil Bailey, James Charnley, Thomas Colloy, S. E. Critchley, J. O. T. Fiddes, F. L. Hoop, John Mills, Kathleen O'Donnell, M. C. Paterson, Norah H. Schuster, L. J. Schwartz, V. T. Smith, Marie Wardman, and F. L. Whincup.

Pharmacology and Therapeutics.—Mary G. Cardwell, H. T. Savage, V. T. Smith, and G. R. Wadsworth.

SECOND M.B. EXAMINATION.

Kathleen Doyle, Georgiana Duthie, Percival Fildes, F. G. Hamnett, *Simon Kelly, J. N. Laing, *W. E. Mason, J. G. Nolan, E. R. Ormerod, Olga G. M. Payne, F. L. Pickett, Edme Ratner, William Rehan, A. E. H. Sadok, Doris M. R. Tompkin, Ethel D. Willis, Ruth A. Wilson, and James Yates.

* Distinction in Physiology.

† Distinction in Physiology and Anatomy.

Physiology.—E. J. Allison.

FIRST M.B. EXAMINATION.

Part III. (Organic and Bio-Chemistry).—J. B. Fulton, W. E. Mitchell, E. L. Morgan, Annie Rothwell, and El. S. El. G. Shear.

DIPLOMA IN DENTISTRY (THIRD EXAMINATION).

C. H. Travis.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary meeting of the Council was held on Dec. 14th, Sir W. Watson Cheyne, the President, being in the chair. A report was read from the Board of Examiners in Anatomy and Physiology for the Fellowship, stating that at the recent examination 27 candidates were examined, and that of these 11 were approved and 16 rejected. The question was raised as to the desirability of discontinuing for the present the examinations in anatomy and physiology for the Fellowship, but the Council decided to make no change. A report was read from the Court of Examiners, stating that at the recent final examination for the Fellowship 17 candidates presented themselves, and that of these four were found qualified. It was resolved to grant diplomas of Fellowship to the successful candidates. It was resolved to grant Licences in Dental Surgery to 32 successful candidates. The President reported that he attended in the theatre of the College at the day and hour appointed for the annual meeting of the Fellows and Members, and that the quorum of 30 was not present, and that after waiting 15 minutes he had declared that the meeting could not be held. It was resolved by the Council that no further steps should be taken towards holding the meeting, and that no reduction as to the number needed to form a quorum should be made. The President reported that he had appointed Mr. Norman G. Bennett, a member of the Board of Examiners in Dental Surgery, to give evidence before the Home Office Committee on the use of cocaine by unregistered dentists, and that Mr. Bennett had duly attended before the Committee and had been able to supply the Committee with information of importance. In accordance with a report of the subcommittee on elections to the Council, it was resolved to take steps to alter the by-laws so as to allow three months to elapse between the nominations of candidates and the election to the Council. This is intended to allow Fellows residing in distant parts of the world to take part in the elections of members of Council. A report was read from Sir Henry Morris on the proceedings of the General Medical Council at their recent session. The best thanks of the Council were given to Sir Henry Morris for his services as the representative of the College.

The following are the names and medical schools of the successful candidates in the Final Examination for the Fellowship:—

Thomas Jacob Cobbe, M.B., B.Ch. Dub., Trinity College, Dublin, and St. Bartholomew's Hospital; William Edward Tanner, M.B., B.S. Lond., M.R.C.S., L.R.C.P. Lond., Guy's Hospital; Harry Bertram Walker, M.B., B.S. Lond., M.R.C.S., L.R.C.P. Lond., London Hospital; and Ambrose Edgar Woodall, M.D., Ch.B. Vict., Manchester University and St. Bartholomew's Hospital.

The diploma of Member was conferred upon Harry Goudge Grant, M.D. Dalhousie, Dalhousie University and University College Hospital, who has now complied with the necessary by-laws for the Membership.

Licences in Dental Surgery were also conferred by the Council upon the following 32 candidates (including two ladies) who have passed the requisite examinations and have complied with the by-laws:—

Harold John Allen, Middlesex and National Dental Hospitals; Alfred Herbert Bowes, Guy's Hospital; Rossiter Hodgson Bywaters and William Sutton Campbell, Middlesex and Royal Dental Hospitals;

William Ashley Cooper and Richard Lawton Cowley, Guy's Hospital; Robert Peter Dewar, London Hospital; Lionel Harold Dixon and Philip Green, Guy's Hospital; Ernest Alphonse Hardy, Charing Cross and Royal Dental Hospitals; Rosa Edwards Halse, London School of Medicine for Women and National Dental Hospital; Herbert Hart, Bristol University; Charles Frederick Hawkins, Guy's Hospital; Gerald Mackenzie Hickley, Westminster and Royal Dental Hospitals; Philip Henry Marsh and William Mercer, Guy's Hospital; John Austen Ogden, D.D.S. Michigan, Michigan and Middlesex Hospital; John Peter, David Maurice Rees, and Leslie George Ridout, Middlesex and Royal Dental Hospitals; Clair William Roberts, D.D.S. Chicago, Chicago and Middlesex Hospital; Valentine Sainty, Middlesex and Royal Dental Hospitals; Frederick Robert Salisbury, Guy's Hospital; Enoch Sanders, Liverpool University; Simon Sanders, Guy's Hospital; Mansfield John Knox Soutter, University College and National Dental Hospitals; Vera Esle Marie Sturridge, London School of Medicine for Women and National Dental Hospital; Frederick Charles Truman, Birmingham University; and Hampdon Wallis, George William Whelton, Walte; Reginald Wotton, and James Alfred Snarey Wright, Guy's Hospital.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An extraordinary Comitia was held on Dec. 10th, Dr. Frederick Taylor, the President, being in the chair. Dr. Joseph Arthur Arkwright, who was elected to be a Fellow on April 27th last, was by a resolution of the College admitted to the Fellowship *in absentia*. A communication was received from Dr. E. Malins, F.R.C.P., of Birmingham, concerning a gift to the College by Mr. F. W. Mitchell. A resolution was passed that the best thanks of the College be given to Mr. Mitchell for his generous donation through Dr. E. Malins of £500 to be devoted to the investigation and treatment of tuberculosis.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held at Caxton Hall, Westminster, on Dec. 13th, with Sir Francis H. Champneys in the chair. A number of midwives were struck off the Roll, the following charges, amongst others, having been brought forward:—

The midwife was not scrupulously clean in every way, as required by Rule E. 2; did not employ antiseptic precautions, and did not comply with the provisions of Rules E. 4 and 8; did not take and record the pulse and temperature of her patients at each visit, as required by Rule E. 14, and did not keep her register of cases as required by Rule E. 24. A child presenting symptoms of illness from birth and suffering from inflammation of and discharge from the eyes, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rules E. 19 and E. 20 (5) of the rules then in force; the child being in the condition aforesaid, she did not hand to the husband or the nearest relative or friend present the form of sending for medical help, properly filled up and signed by her, in order that this might be immediately forwarded to the medical practitioner, as required by Rule E. (19) of the rules then in force; and medical aid having been sought for the child, she neglected to notify the local supervising authority thereof, as required by Rule E. 21 (1) of the rules then in force.

ROYAL INSTITUTION.—The Ninety-first Christmas Course of Juvenile Lectures will be delivered by Professor Arthur Keith, F.R.S., at 3 o'clock on Dec. 28th and 30th and Jan. 2nd, 4th, 6th, and 9th, the subject being The Human Machine which all must Work. The lectures before Easter include six by Professor C. S. Sherrington on The Old Brain and the New Brain and their Meaning, and Pain and its Nervous Basis.

THE CHILD-STUDY ASSOCIATION.—In the Jehangier Hall of the University of London, South Kensington, on Wednesday, Jan. 3rd, 1917, Mr. J. C. Maxwell Garnett, Principal of the Municipal School of Technology, Manchester, will lecture on the Vocational Outlook in Education. The chair will be taken at 5.30 P.M. by the Hon. Sir John A. Cockburn, K.C.M.G.

A THREE months' course of lectures and demonstrations in hospital administration will be given at the North-Western Hospital, Hampstead, N.W., by Dr. E. W. Goodall, the medical superintendent of the hospital, on Tuesdays and Fridays, at 5 P.M., beginning Tuesday, Jan. 2nd, 1917. Medical men desiring to attend a course of instruction are required to pay a fee of £3 3s. to the clerk, the Metropolitan Asylums Board, Embankment, E.C., giving their full name and address.

KING EDWARD VII.'S HOSPITAL, CARDIFF.—An appeal was made in January of this year by Colonel Bruce Vaughan, the vice-chairman of this hospital, to add 150 beds to the accommodation. Should this be done, the hospital will contain between 450 and 460 beds. The appeal has had a good response, for £30,000 towards the £65,000 required have already been subscribed, as well as a sum of £12,000 for endowment. Colonel Vaughan, in June last, made a further appeal for £55,000 for a nurses' home and maternity and child-welfare hospital, and £50,000 have been subscribed for this purpose by Sir Edward Nicholl, R.N.R., so that towards the total appealed for—viz., £120,000 for capital expenditure—£80,000 have already been found, leaving £40,000 still to be raised. Sir Edward Nicholl's gift will

release, when the nurses' home is completed, a large area of the present building now occupied by the nurses' cubicles and recreation-rooms, and will enable the board to use this space for wards and clinical laboratories; indeed, it would be impossible to proceed with the addition of 150 beds without the provision of new beds for nurses. The home will provide accommodation for 160 nurses, with recreation-rooms, baths of the most modern kind, verandahs facing south, and lawn-tennis and croquet grounds. The maternity hospital will accommodate 89 beds for ante-natal and post-natal purposes and 23 beds for the treatment of delicate children up to school age.

ROYAL ALBERT HOSPITAL, DEVONPORT.—The fifty-third annual meeting of the subscribers to this charity was recently held under the presidency of Lord St. Levan. The report showed that for the year ended Sept. 30th, 1916, 557 in-patients had been admitted, 2401 patients had been treated in the casualty department, and 953 ophthalmic cases were attended. The financial statement showed an income of £5092, and an unfavourable balance of £613 against £1691 in the previous year. The house-to-house collection realised £806, and promises of an additional £300 per annum in annual subscriptions. The committee allude to the generous and splendid support of the working classes.

Dr. William Russell has been elected President of the Royal College of Physicians of Edinburgh in succession to Dr. A. H. F. Barbour.

SCHOOLS at Edmonton have been 'closed' owing to an epidemic of measles, more than 500 cases of which have been notified.

The committee of the London Temperance Hospital has appointed Mr. R. T. Lawlor to be secretary in place of the late Mr. A. W. Bodger.

The Alton Cripples Hospital and College Committee has received £1000 for the naming of a cot in memory of R. S. Emery, Queen Victoria's Rifles, who was mortally wounded in the trenches on Dec. 5th.

The vacancy in the office of secretary-superintendent of the Middlesex Hospital created by the sudden death of Mr. F. Clare Melhado, who served the hospital so devotedly for 37 years, has been filled by the appointment of Mr. Walter Kewley, who has been the resident assistant secretary for the past 11 years.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Policy of the New Government.

AN important declaration on the policy of the new Government was made by Mr. LLOYD GEORGE in the House of Commons on Tuesday. As to the German peace overtures, he said that so far the enemy had indicated no terms whatever. The attitude of the Government was that there could be no peace without reparation and security. The Prime Minister indicated that still greater national efforts would be required. He also announced that steps would be taken to draft men from unessential trades into munition work and other work of national importance. Compulsion would be adopted if sufficient volunteers were not obtained by the time the House of Commons reassembled early next year.

HOUSE OF COMMONS.

THURSDAY, DEC. 14TH.

Tribunals and Medical Evidence.

Mr. SNOWDEN asked the Parliamentary Secretary to the Local Government Board whether a military service tribunal, in a case where there was some doubt about the medical evidence of an applicant for exemption, were entitled to submit the case for the consideration of an Army Medical Board.—Mr. HAYES FISHER replied: It is open to a tribunal to suggest that an applicant for exemption should be examined by a medical board, but they have no authority to direct such an examination.

Wounded Soldiers as Insured Persons.

Mr. BARLOW asked the Financial Secretary to the War Office whether in the case of members of trade-unions who were insured persons and were sent to hospital owing to wounds received in the war, half the military pay was deducted, and whether in view of payments made under the Insurance Act both before and since the war treatment in the hospitals for wounded men should be free.—Mr. FORSTER answered: The reply to the first part of the question is in the negative, and the second part, therefore, does not arise.

MONDAY, DEC. 18TH.

Substitutes for Sugar.

Mr. CAUTLEY asked the Parliamentary Secretary to the Food Control Board whether, having regard to the scarcity of cane sugar and the difficulty of the poor in obtaining even a limited quantity of it, and considering that glucose was a variety of sugar which from a physiological point of view was as nutritious and as easily digested as cane sugar, that glucose could be prepared in large quantities and cheaply by the several factories already making it in this country, or their extensions, and that the sole objection to it as a sweetening agent was that it was not sweet enough, but this could easily be overcome by the addition of a suitable quantity of saccharine, he would encourage or undertake the manufacture of glucose and the addition of saccharine thereto as a means of providing for the people a nutritious sugar cheap, and in no respect injurious, and thereby solving the sugar difficulty.—Captain BATHURST replied: As the raw materials from which glucose is made would have to be imported and would occupy more tonnage than an equivalent amount of sugar, there would not appear to be any advantage in offering special encouragement for the manufacture of this article. Moreover, as matters now stand, it is probably of greater importance to adjust more accurately the distribution of sugar than to increase its quantity or the quality of possible substitutes. The possibility and desirability of extending the use of saccharine for flavouring purposes will be considered, but I should point out that saccharine has no food value.

TUESDAY, DEC. 19TH.

Promotion in Army Medical Service.

Answering Mr. LYNCH, Mr. MACPHERSON (Under Secretary for War) said: Promotion in the Army Medical Service as in other branches of the Army is determined by seniority and merit.

WEDNESDAY, DEC. 20TH.

The Late Senior Medical Officer at Frongoch.

In the course of an answer to Mr. DILLON on the Frongoch Camp, at which Irish prisoners are detained, Sir G. CAVE (Home Secretary) said: I deeply regret to say that the senior medical officer at the camp, who had carried out his duties very efficiently and had shown much kindness to the prisoners, was found drowned near Bala on Dec. 14th. I have asked for a full report of the proceedings at the inquest, and at present can only say that, according to a brief report which I have received, the medical officer had been much worried by certain unfounded charges made against him and his staff. A verdict of "Suicide while of unsound mind" was returned.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

BOWER, H. E., M.D. Edin., has been appointed Medical Officer of Health for the Runcorn Rural District Council.
BRODRICK, CHARLES CUMBERLAND, L.R.C.P. & S., L.M. Edin., Medical Officer of Health for the Tavistock (Devon) Rural District Council.
HANDLEY, W. SAMUELSON, M.D., M.S. Lond., F.R.C.S. Eng., Surgeon to the Middlesex Hospital.
MACARELL, W. W., M.D. Liverp., Pathologist to the Royal Infirmary, Leicester.
McGOWAN, THOMAS, Temporary Medical Officer of Bridewell Dispensary District of the Athlone Guardians.
O'CONNOR, BRIDGET, M.B., Assistant Medical Officer of Health in connexion with the Plymouth Maternity and Child Welfare Scheme.
WIGHTWICK, ALFRED, M.B., Ch.B. Vict., Honorary Anaesthetist to the Torbay Hospital, Torquay.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index). When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BARNET, CLARE HALL SANATORIUM FOR PULMONARY TUBERCULOSIS, South Mimms, near Barnet.—Assistant Medical Superintendent.
BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £250 per annum, with board, &c.
BOLTON UNION, FISHPOL INSTITUTION, Farnworth, near Bolton.—Resident Assistant Medical Officer. Salary £385 6s. per annum, with rations, &c.
BOURNEMOUTH, ROYAL VICTORIA AND WEST HANTS HOSPITAL.—House Surgeon, unmarried, for six months. Salary £200 per annum and extras, with board, &c.
BRISTOL GENERAL HOSPITAL.—House Surgeon. Salary at rate of £175 per annum, with board, &c.

CARDIFF. KING EDWARD VII.'S HOSPITAL.—Fourth-Year Student Dresser for three months. Salary at rate of 52 guineas per annum, with board, &c.

GABRIEL CITY.—Assistant School Medical Officer (Male or Female). Salary £350 per annum.

CHelsea HOSPITAL FOR WOMEN. Arthur-street, Chelsea, S.W.—House Surgeon, unmarried. Salary £300 per annum.

COVENTRY EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary £300 per annum.

OSWESTRY UNION INFIRMARY.—Resident Assistant Medical Superintendent of Union Infirmary and Assistant Medical Officer of Union House and Children's Homes. Salary £250 per annum, with residential allowances.

EVELINA HOSPITAL FOR SICK CHILDREN. Southwark, S.E.—Clinical Assistant in Out-patient Departments.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST. Brompton.—House Physician for six months. Salary 30 guineas.

LIVERPOOL, NORTHVALE INFIRMARY.—House Surgeon. Salary £150 per annum, with board, &c.

LIVERPOOL, ROYAL SOUTHERY HOSPITAL.—Three House Surgeons (Male or Female) for six months.

MARGHERIT, ANCOATS HOSPITAL.—Two unqualified Residents. Salary £50 per annum, with board, &c.

MELBOURNE, AUSTRALIA.—Director to Walter and Eliza Hall Institute of Research in Pathology and Medicine. Salary £800 per annum.

MIDDLEBROUGH, NORTH OSMESBY HOSPITAL.—Assistant House Surgeon. Salary £150 per annum, with board, &c.; if a Senior Student, salary £100 per annum.

NORDEACH-UPON-MENDIP SANATORIUM. B'gdon, Bristol.—Assistant Medical Officer. Salary £200 per annum, with board, &c.

NOTTINGHAM AND MIDLAND EYE INFIRMARY.—Female House Surgeon.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Physician. Salary £200 per annum, with board, &c.

QUEEN MARY'S HOSPITAL FOR THE EAST-END. Stratford.—House Surgeon.

QUEEN'S HOSPITAL FOR CHILDREN. Hackney-road, Bethnal Green, E.—House Surgeon and House Physician for six months. Salary £100 per annum, with board, &c. Also Temporary Assistant Physician.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL. 234, Great Portland-street, W.—Resident Surgical Officer.

SIDMOUTH URBAN DISTRICT COUNCIL.—Medical Officer of Health. Salary £100 per annum.

SUNDERLAND COUNTY BOROUGH EDUCATION COMMITTEE.—Temporary Female School Medical Officer. Salary £350 per annum.

VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST ON THE SEPARATE PRINCIPLE.—Assistant Resident Medical Officer.

WESTMORLAND SANATORIUM. Meathop, Grange-over-Sands.—Second Assistant Medical Officer. Salary £200 to £250 per annum, with board, &c.

WEST RIDING OF YORKSHIRE.—Assistant Medical Officer at the Cardigan Sanatorium, Carr Gate, near Wakefield, and the Middleton-in-Wharfedale Sanatorium, near Ilkley. Salary £400 per annum.

Births, Marriages, and Deaths.

BIRTHS.

COWAN.—On Dec. 16th, at Thetford, Norfolk, the wife of Geoffrey Cowan, M.D., of a son.

DONNELL.—On Dec. 15th, at Segontium-terrace, Carnarvon, "Daisy," wife of Captain J. H. Donnell, R.A.M.C., of Hinckley, Leicestershire, of a son.

HARTRIDGE.—On Dec. 15th, at King's Hill, Hoo, near Rochester, the wife of Lieutenant H. Hartridge, R.N.V.R., M.B., of a daughter.

FRISTLEY.—On Dec. 16th, the wife of Major H. E. Fristley, C.M.G., R.A.M.C., Blackmoor, Burley, Hants, of a son.

SIMMONS.—On Dec. 11th, at Purley, the wife of Alfred G. Simmons, M.B., Surgeon, R.N., of a son.

MARRIAGES.

MACALPINE-JONES.—On Dec. 7th, at All Souls' Church, Langham-place, London, Captain James B. Macalpine, F.R.C.S., of Manchester, second son of Sir George and Lady Macalpine, to Doris, younger daughter of Mr. and Mrs. Herbert Jones, of Oswestry.

ROE-LLOYD.—On Dec. 7th, at Holy Trinity Church, Brompton road, Captain Robert Bradley Roe, R.A.M.C., to Elizabeth, daughter of the late Thomas Glynn Lloyd.

STATHAM-SHERWIN.—On Dec. 13th, at St. Mary Abbot's, Kensington, Reginald Samuel Sherwin Statham, M.D., Temporary Captain, R.A.M.C., to Annie Maitland, youngest daughter of the late Rupert Sherwin and Mrs. Sherwin, of Worcester.

WHITAKER-HAMILTON.—On Dec. 14th, at Westcliff, Joseph H. Whitaker, M.D., to Marion, widow of L. H. Hamilton, of Southsea.

DEATHS.

BARR.—On Dec. 14th, at Woodside-place, Glasgow, Thomas Barr, M.D.

CAYLEY.—On Dec. 17th, at Queen's-road, Richmond, Surrey, William Cayley, M.D., F.R.C.P., aged 80.

EVE.—On Dec. 15th, Sir Frederic S. Eve, F.R.C.S. Eng., Temporary Lieutenant-Colonel, R.A.M.C., Consulting Surgeon to the Eastern Command and to the London Hospital, aged 63.

EWART.—On Dec. 7th, Charles Ewart, M.D., Brussels, L.R.O.P., M.R.C.S., of 58, Queen's Gate-terrace, S.W. Born at Fulham, Oct. 12th, 1851. Buried at Brompton Cemetery. Much beloved and deeply regretted.

SMITH.—On Dec. 15th, at Wells, Somerset, of pneumonia, William Alexander Lauder Smith, M.B., B.C. Cantab., aged 51.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE REMUNERATION OF MEDICAL MEN NINETY YEARS AGO.

THE remuneration of medical men 90 years ago was a very capricious affair; hospital appointments went by favour, the corporations only guarded the interests of limited classes, and the services of medical officials were hardly recognised. The Society of Apothecaries of London secured considerable power by the Act of 1815, but the Licentiate, though legally protected, did not form an influential class.

Mr. T. B. Rowe, senior overseer to the Poor-law authority at Eastbourne, has sent us a copy of the minutes of the Select Vestry held at the Workhouse, Eastbourne, on Monday, March 20th, 1826, at which meeting the following notice was given:—

That Mr. John Ranking, Surgeon, has agreed to attend the Poor of this Parish and find them in Surgery, Physic, and Midwifery for the sum of Forty Pounds per annum (small-pox excepted), commencing from the 25th instant.

Epidemics of small-pox, when they occurred, were so devastating, and entailed so much treatment of the cases that were not fatal, that Mr. Ranking's stipulation not to attend such cases by contract was, no doubt, reasonable. We cannot, however, find out if this stipulation was usually made.

From a further minute of the Select Vestry of Eastbourne we learn that—

At a meeting of that body "held at the Lamb Inn, in the Parish of Eastbourne, on Friday, the 8th day of December, 1826, for the purpose of taking into consideration the propriety of Vaccinating the Poor of this Parish," it was resolved that "Mr. John Ranking, Surgeon, is agreed with to Vaccinate the Poor of this Parish at three shillings per head agreeable to the list of names that shall be furnished to him by the Select Vestry."

It is clear that the Select Vestry saw that prevention was necessary, and the fact may have been brought home to them by the failure to obtain from their parish medical officer a contract for treatment.

A third extract sent by Mr. Rowe is taken from the parish accounts of January, 1823. It runs as follows:—

Account for Medical attendance, nurses, drugs, rent of cottage, in the case of Elizabeth Robins ill of small-pox, to John Ranking, Surgeon, Eastbourne, 274 10s. 3d. Laying out the body, double fees, 15s.

From this it will be seen that the parish did not escape liability for the treatment of small-pox because their medical officer attended this class of patient in a private capacity. Eastbourne, or East Bourne, in 1826 was quite a small place.

HEALTH OF GRENADA.

A REPORT on the Blue-book of Grenada for 1915, prepared by Mr. H. Ferguson, the Colonial Secretary, is to hand. From this it appears that the estimated population on Dec. 31st last was 71,567. The births during the year numbered 2415. The deaths totalled 1744, and the death-rate for the whole colony was 24.35 per 1000. The records show that dysenteric diseases affected a great mass of the people and that malaria was to some extent epidemic. Of the total deaths, 40 per cent. were due to dysentery and diarrhoea and enteritis, whilst the deaths from malaria numbered 147. The infantile mortality is fairly satisfactory as compared with other tropical countries, but the percentage of deaths between the ages of 1 and 15 years is excessive, the excess being probably due to preventable causes which may disappear with the adoption of measures for improved sanitation.

The operations undertaken by the local branch of the International Health Commission, under the charge of Dr. A. G. Macdonald, for the eradication of hookworm disease have been vigorously carried on. On a population of 19,000 examined, it has been ascertained that hookworm infection exists to an extent of 75 per cent., and from the variety of this population examined it is reasonable to assume that infection to the same extent exists throughout the colony. Infection by intestinal parasites of one kind or another existed in 99 per cent. of about 19,000 examined. 30 per cent. of the people treated during the year have been cured. Realising that no improvement in the health of the people as the result of treatment for hookworm can be expected to be permanent unless the sources of infection are removed, the Government have amended the Public Health Ordinance and Regulations to provide for more effective disposal of human excreta. Pit closets have also been erected at Government schools, and arrangements are being made for public latrines in

villages where the conditions are unsuitable for pit closets at individual houses.

At the Colony Hospital, which contains 140 beds, the number of patients admitted during the year was 1887; 931 were discharged cured and 857 relieved, while 99 died and 123 remained in hospital at the close of the year. 108 major surgical operations were performed. At the Yaws Hospital a large increase in the number of patients took place, due to greater activity of the sanitary inspectors in discovering sufferers from the disease; 663 were treated, as compared with 460 in 1914. Only 20 were treated with salvarsan, sufficient supplies of the drug being unobtainable. At St. Andrew's Hospital 220 patients were treated during the year, and at Carriacou Hospital 252. The Hospital for Consumptives provides 20 beds, and 54 patients were treated, 25 being males and 29 females. There were 27 deaths, most of the cases admitted being in an advanced stage of the disease and offering little hope of cure. At the five Government dispensaries medicines are supplied free of cost to paupers, labourers' children under 10 years of age, labourers over 60 years, police constables, and prisoners. Free medicines are also supplied to all labourers suffering from yaws, syphilis, malaria, or ankylostomiasis. The rainfall during the year at Richmond Hill station was 72.57 inches; the maximum shade temperature was 92.0° F. and the minimum 70.0°.

USEFUL DIARIES FOR 1917.

Bale's Dental Surgeon's Daily Diary and Appointment Book, 1917.—The principal features of this quarto diary and appointment book are the monthly almanac, which appears through a rectangular opening in the centre of the front cover, and the appointment pages, which are arranged to show a week at an opening of two pages, visiting times being indicated at the side of each daily column. In addition to postal and other general information, items of special interest to dentists are given, such as the conditions recommended for adoption by boards of guardians and others in regard to the appointment of dental officers, lists of unions and district schools, with names of dentists appointed, and so forth. Space for cash accounts and memoranda is also provided, as well as lettered pages for making a written index. The price of the book is 5s. plain and 6s. 6d. interleaved with blotting-paper. Messrs. John Bale, Sons, and Danielsson, and Messrs. Claudius Ash are the publishers.

"Welcome" Photographic Exposure Record and Diary, 1917.—The new edition of this useful companion for photographers contains in a small space practically everything that the amateur photographer requires to know. With the aid of the exposure calculator affixed to the back of the cover of the book and of the tables for use in connexion with it the calculation of exposure time becomes a simple affair, while the development of plates of different classes at different temperatures is made equally intelligible. Tank development, copying, enlarging, reducing, treatment of lantern plates, photography at night and by artificial light are other subjects clearly described. The book measures 3½ by 5½ inches and is published at 1s. There are separate editions for the northern hemisphere and the tropics and for the southern hemisphere and the United States.

Live-Stock Journal Almanac, 1917.—In addition to the ordinary diary pages, which include a breeders' table, this publication contains much that is of interest to stock-breeders and others. An article on the world's meat-producing stocks in war-time expresses the opinion that the days of raising pedigree stock as a pastime are over, for the work must now be taken up as a serious business. Many reproductions of live-stock portraits are scattered throughout the pages of the almanac, including a reproduction of the painting by Stubbs of the famous thoroughbred "Eclipse."

LONGEVITY AMONG GREAT MEN.

In reference to the alleged longevity of the Presidents of the United States, to which a correspondent "A.B.C." alluded in our issue of Sept. 2nd, Professor I. Fisher, professor of political economy in Yale University, sends us a copy of an address, entitled "The Mortality of our Public Men," which he delivered before the American Statistical Association in December, 1915, and published in the quarterly number of the Association for March, 1916. His conclusions are exactly opposite to those arrived at by "A.B.C." "My study shows that the longevity of our Presidents, omitting the three still living, is only 82 per cent. of that 'expected' according to the American Experience Table, and the standard of this table is less than that shown by insured lives to-day. Your contributor reckons the longevity of the Presidents from birth. This cannot be claimed to test the longevity of Presidents, or the effect of occupying the

Presidency on the longevity of a man, since the Presidents were not Presidents from birth, but became Presidents at a certain age in their lives. Their longevity should, therefore, be reckoned from the date of their inauguration in each case. It is upon this basis that I find the longevity of the Presidents to be considerably below that among insured lives of the present time." There are other points of interest in Professor Fisher's study. His position is unquestionably a logical one, although it might involve a complete revision of our commonly accepted conclusions.

ELECTRICITY AS THERAPEUTIC AGENT.

An interesting essay competition is announced by the Dorset Field Club. The "Cecil" medal and prize of £10 will be awarded in May, 1917, for the best paper on "The more recent applications of electricity in the present war, especially in the treatment of diseases and wounds arising therefrom." The competition will be open to any person who is between the ages of 17 and 35 on May 1st, 1917, and who either was born in Dorset or has resided in the county for not less than one year between May 1st, 1915, and May 1st, 1917. A statement giving particulars of qualification should accompany each paper sent in. Papers should be sent in by March 1st, 1917, to Mr. N. M. Richardson, Montevideo, near Weymouth. Further details may be obtained from the Assistant Secretary of the Dorset Field Club (Mr. H. Pouncey, Dorset County Chronicle Office, Dorchester).

ETHICAL STANDARDS AND MEDICAL PRACTICE UNDER INSURANCE ACT.

To the Editor of THE LANCET.

SIR,—Seeing some correspondence in reference to the Insurance Act recently, I offer two suggestions—viz.: 1. That the word "panel" as applied to medical practitioners under the Act should go, and the sooner the better. We have surgeons under the Admiralty, the War Office, the Local Government Board, the Home Office, and so on: why not surgeons or doctors to the National Health Insurance Act? 2. The names of medical practitioners engaged in such a service must not be posted up in towns and villages.

I am, Sir, yours faithfully,

Latheron E., Calthness, Dec. 11th, 1916.

A. P. WALTERS.

COLLOIDAL IODINE.

Mr. Lewis Stroud, of the Crookes Laboratories, 50, Elgin Crescent, London, W., calls attention to the advantage to be derived by the use of colloidal iodine in preference to sodium iodide in electro-therapy. In colloidal iodine, he points out, the work of dissociation is already done, the ions being free, whereas the use of the salt in ionisation entails the consumption of electric energy (and consequently time) in overcoming the affinity between the ions. The constitution and properties of colloidal iodine are being demonstrated by means of the ultra-microscope at the above laboratories, and medical men are invited to acquaint themselves practically with the properties of this interesting preparation.

ENGLISH AND GERMAN MODESTY CONTRASTED.

In a recent number (Nov. 23rd) of the *Deutsch. med. Wochenschr.* the editor comments on a striking difference between the literary style of the Englishman and of his own contributors. While, he says, the Englishman as a token of his robust self-consciousness writes the word "I" with a capital and has a preference for beginning a sentence with it, many German authors, some of them well known, have a positive horror of speaking in the first person, apparently fearing that the word "ich" might be held by their readers as an unpardonable presumption. Instead of the personal pronoun the German writes, "the author has" or "writer of these lines has" Dr. Schwalbe fails to find this "sensitive-plant like modesty" in the literary style of any other nation, and in a column which he frequently devotes to rebutting evidences of alleged German inhumanity in warfare he claims this literary fault as the one and only proven "German barbarity."

THE London address of the Ladies' Auxiliary Committee of the Y.M.C.A. base camps in France has been changed from 17, Norfolk-street to 74, South Audley-street, London, W.

One of Them.—We will first ascertain if there is any official reason for the new action.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

The following journals, magazines, &c., have been received:—Bulletin et Mémoires de la Société Médicale des Hôpitaux de Paris, Bulletin of the Johns Hopkins Hospital, Modern Hospital, Clinique Ophtalmologique, Maryland Medical Journal, Annals of Tropical Medicine and Parasitology, Aberdeen University Review, British Dental Journal, Journal of Laryngology, Rhinology, and Otology.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynecological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

WEDNESDAY.—Clinics.—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whiphram); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynecological Operations (Dr. A. E. Giles). Clinics.—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics.—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

THURSDAY.—5.15 P.M., Clinical Lecture.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

Christmas Lectures.—The Human Machine which All must Work (adapted to a Juvenile Auditory).

THURSDAY.—Prof. A. Keith: Living Engines.

SATURDAY.—Prof. A. Keith: Living Levers.

EDITORIAL NOTICES.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C.

MANAGER'S NOTICES.

ALTERATION IN THE PRICE OF "THE LANCET."

INCREASED war expenses and cost of production necessitate an increase of the price of THE LANCET. Commencing with the first issue in the New Year, the price will be 8d. instead of 6d. The rates of subscription will remain as revised in October.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and not to THE LANCET Offices.

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TO COLONIAL AND FOREIGN SUBSCRIBERS.

Subscribers abroad are particularly requested to note the rates of subscriptions given on page 4.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Dec. 20th, 1916.

| Date. | Rain-fall. | Solar Radio in Vacuum. | Maximum Temp. Shade. | Min. Temp. | Wet Bulb. | Dry Bulb. | Remarks. |
|---------|------------|------------------------|----------------------|------------|-----------|-----------|----------|
| Dec. 14 | ... | 36 | 36 | 33 | 34 | 34 | Foggy |
| " 15 | 0.10 | 39 | 39 | 32 | 34 | 35 | Overcast |
| " 16 | ... | 36 | 35 | 31 | 31 | 32 | Foggy |
| " 17 | ... | 33 | 37 | 28 | 31 | 32 | Foggy |
| " 18 | ... | 39 | 37 | 31 | 32 | 32 | Foggy |
| " 19 | ... | 43 | 39 | 31 | 34 | 35 | Cloudy |
| " 20 | ... | 61 | 43 | 35 | 36 | 36 | Fine |

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

BOOKS, ETC., RECEIVED.

BLACKWOOD, WILLIAM, AND SONS, London and Edinburgh.

The Wards in War-time. By a Red Cross P.M.O. Price 5s. net. Wounded and a Prisoner of War. By a Wounded Officer. Price 5s. net.

CHAPMAN AND HALL, London.

Flight of Mariette: Story of the Siege of Antwerp. By Gertrude E. M. Vaughan. Introduction by John Galsworthy. Price 3s. 6d. net.

CONSTABLE AND CO., London.

At Suva Bay. By John Hargrave. Price 5s. net.

CORNISH BROS., Birmingham.

Catalogue of the Collection of Skulls and Teeth in the Odontological Museum of the University of Birmingham. Compiled by John Humphreys, M.D.S.

HEINEMANN, WILLIAM, London.

Treatment of Infantile Paralysis. By Robert W. Lovett, M.D. Boston. Price 8s. 6d. net.

MARLBOROUGH, E., AND CO., London.

Sinhalese Self-taught. By Don M. de Z. Wickremasinghe, Hon. M.A. Oxon. Price 2s. 6d. net.

SIDGWICK AND JACKSON, Adam-street, Adelphi.

The Amazing Philanthropists. By Susanne R. Day. Price 3s. 6d. net.

UNWIN, T. FISHER, London.

Hospital Days. By Platoon Commander. Price 2s. 6d. net.

WILEY, JOHN, AND SONS, New York. CHAPMAN AND HALL, London.

Manual of Fire Prevention and Protection for Hospitals. By Otto R. Michel, M.D. Price 4s. 6d. net.

Elementary Qualitative Analysis. By Benton Dales, Ph.D., and Oscar L. Barnebey, Ph.D. Price 5s. 6d. net.

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- Y**—York City Asylum, Fulford, Clerk to the.

Letters, each with enclosure, are also
acknowledged from—

- A**—Ardath Tobacco Co., Lond.; Mr. E. P. Allum, Northampton; Aymard Patent Milk Sterilizer Co., Ipswich; Dr. J. Atlee, Lond.; Dr. E. H. B. Adamson, Leeds;
- D**—Dr. J. Alkman, Guernsey; Dr. J. A. Armitage, Hastings; Animal Defence and Anti-Vivisection Society, Lond., Asst. Sec. of.

An Address

ON

THE HYGIENIC LESSONS OF THE WAR.

Delivered at University College, London,¹

By HENRY R. KENWOOD, M.B. EDIN., D.P.H.,
F.R.S.E.,

TEMPORARY LIEUTENANT-COLONEL, ROYAL ARMY MEDICAL CORPS;
CHADWICK PROFESSOR OF HYGIENE AND PUBLIC HEALTH
IN THE UNIVERSITY OF LONDON.

SURGEON-GENERAL RUSSELL, LADIES, AND GENTLEMEN,—
It may be asked, "What have war and hygiene in common, seeing that the aim of one is to conserve human life and that of the other is to destroy it?" The answer is that warfare is dependent upon healthy human material, and that its lessons have often prepared the way to hygienic progress in civil communities. Sir Alfred Keogh has directed our attention to notable instances of the connexion between sanitation and efficiency in war, and to the fact that the absence of sanitation has wrecked armies. Therefore Hygiene enters the field with Mars, and she is amply proving the value of her services in the present supreme test. The war will repay her for these services if the lessons it has taught the nation are not disregarded.

One gratifying lesson of the war is that civilisation, in bringing refinement and increased sensibility, has robbed us of nothing which had true power and nobility in the earlier days of our development; that man stands in no need of warfare for the development of his nobler traits—he need not be brutal in order to be brave. That the virtues called forth in war will die out if there is no war is the shallow and false philosophy of a German professor ignorant of human nature. It is conceivable that such virtues might become attenuated in a population which had to sustain no fight for a living and to meet no family calls for self-sacrifice and devotion to ideals, but no such population exists; and surely it takes the German mind to doubt whether there can be sufficient scope for the exercise of such virtues in times of peace. A very large proportion of those who are at present fighting had never previously contemplated even the possibility of active participation in warfare, yet such have not shown any less self-sacrifice or valour than the war-imbuéd Germans. Nevertheless, military discipline and a soldier's training are good for every young man, and for this reason alone I would vote for a compulsory period of military training in this country. Surely the war by bringing so many men under military discipline and by calling for great sacrifices for a high purpose will prove a real national asset in that it must make the population more amenable to the forces of moral discipline. Should this prove to be the case, the art of hygiene, itself a form of moral discipline, will be advanced, and some good should flow to the community from the horrors of war.

MAINTENANCE OF AN EFFICIENT POPULATION.

War involves a serious qualitative as well as quantitative loss to the nation. It is not as the storm that cleanses, but as the whirlwind that devastates. War is less dysgenic than venereal disease and the abuse of alcohol—the two great factors in racial degeneration that lay both sexes so gravely under contribution. That Britain has proved capable of maintaining her good stock despite great impoverishments of her most virile manhood is abundantly shown in the record of our isles. To mention one notable instance: the manhood of the country was already seriously drained by the long wars of Edward III when the Black Death ravaged the country with even more terrible consequences; for it claimed a heavy toll of both sexes, discriminating but little between the weak and the strong. Yet the subsequent history of our nation does not indicate that the consequences were of a lasting nature. While, from the public health standpoint, we now enjoy advantages as compared with the population of those earlier days which should favour our

regeneration of stock, it must be borne in mind that these advantages are accompanied by certain modern circumstances that are adverse to child-life, such as a low (and falling) birth-rate and a considerable increase in "urbanisation" and artificial feeding.

Our losses must tell heavily upon our declining birth-rate. A deep shadow will fall upon the life-paths of the many who have lost an only son when there might have been others. They have learnt too late the lesson of the mistake of the small family. Will such evident shadows do something to impress the lesson upon others that the late marriage (so often childless) and the limitation of offspring to one or two, discount both the happiness of the home and our national well-being? Will they have an effect in leading young men and women to think more deeply and to look further ahead in these matters?

An efficient population is an essential factor in the strength of a community which has to face competition, be it in war or in peace; and so the nation has the great duty to perform of building up again as quickly as possible its human capital. This duty is dictated not only from national and patriotic motives, not only from considerations of social well-being and happiness, but also by the natural desire of a Christian country to do what is possible to ensure that human offspring shall grow up into healthy and happy citizens. France has long seen her peril in her low birth-rate, and it was that country which took the initiative in special efforts for conserving infant life. This need has been so much taken to heart during the war that the result is an event which is *unique* in history—the rate of infant mortality has actually fallen while France has been fighting an enemy within her gates. And so with us, the physical welfare of our child-life at the present time must be regarded as of even greater importance than formerly; and it is to the credit of all concerned that we have during the past two years made a great advance in the permanent provisions for the conservation of child-life in this country. Prominent amongst these is the organised effort to cope with the national losses from measles. Everyone is agreed that the ignorance which sacrificed so many children before the war has got to be replaced by knowledge if this great national loss is going to be stemmed. But let us not imagine for one moment that this is easy, nor that our partial child-welfare schemes will suffice. The *home circumstances* of the poorer section of the community are responsible for a reduction both of our birth-rate and of those births which attain to efficient and worthy citizenship. From this and other standpoints it is impossible to exaggerate the importance of better housing. Again, maternal welfare during the last few months of pregnancy is an essential part of infant welfare; and the greatest enemy to intra- and extra-uterine infant life is the poverty that cuts short the necessary supply of food, clothing, and fuel during the critical period of the expectant and nursing mother. Now despite all that can be done by public charitable agencies, there is a considerable residuum of necessitous mothers and infants whose poverty often defies and defeats our objects. It should be the local concern *everywhere* to see that this matter also is seriously attended to. A fund to assist the local authority in a properly safeguarded scheme to this end should be subscribed to by rich and poor alike as the expression of gratitude for a victorious peace, and to the men who in every locality have laid down their lives to secure it; and our women who have done so much to provide comforts for our soldiers will not fail to maintain such good work for the needs of mothers and infants if a suitable appeal is made. I cannot conceive of any memorial of greater national value, nor one more appropriate to the soldier-father and soldier-son, seeing that it aims at a sympathetic provision for the well-being of necessitous mothers and offspring.

ANTITYPHOID INOCULATION.

During the war the principle of adjusting man to his environment when it is difficult to adjust the environment to man has been applied in the protective inoculation against "the great enemy of armies"—typhoid fever. The fact that the rate of typhoid mortality in London is considerably below that for England and Wales generally, proves that a large concentration of population may enjoy great freedom from this disease under the protection of good sanitary circumstances. But it is inevitable that sanitary precautions

¹ A note on the part of this address dealing with Army Sanitation was published in THE LANCET of Nov. 25th, p. 922.
No. 4870.

must be imperfect under active service conditions, despite the excellent work of sanitation which the Army achieves in most difficult circumstances. Indeed, there may be times when sanitary provisions are almost lacking. This was the case during the rapid retirement from Mons, when even water-carts were often destroyed or abandoned; and during the fighting in the trenches at the Aisne there was little time or opportunity for sanitation. Moreover, typhoid fever is endemic each autumn in some areas which have been occupied by our troops and where the sanitation of billeted villages has been indifferent. In the above circumstances the consequences would have been disastrous if there had been neglect in providing the protection afforded by a considerable measure of antityphoid inoculations.

It will be recalled that the United States troops had a terrible experience of this disease in the Spanish-American War of 1898. In six months among 107,973 officers and men 20,738—practically one-fifth of the entire force—had typhoid fever. In South Africa there were 57,684 cases of this disease, of which over 8000 died. Now what about the great war and the British Armies on the Western Front? There have only been scattered cases of typhoid fever and a very occasional small group of cases in different units. The triumph in disease prevention which this represents is further impressed by the fact that (calculating from the available data up to the end of 1915) the deaths among our troops *under active service conditions* furnish a death-rate from typhoid fever which is actually slightly below that of the male civil population of similar ages and for the same period in England and Wales. "The great enemy of armies" has been reduced to impotence by vaccination.

The experience in the present war brings out the fact that the non-inoculated British soldier is very much more liable to catch typhoid fever than is the inoculated soldier; and that when both catch the disease the non-inoculated soldier is between three and four times more liable to die from it. I learn that a like comparison in respect to the French Army is similarly favourable to inoculation, and in the German Army it is authoritatively stated that the number of cases of typhoid fell at once when inoculation was carried out. By the end of 1915 all the armies of the Central Powers were inoculated against typhoid fever.

Thus antityphoid inoculation has proved its value. It saves human life; the severity of attack is generally much lessened; it confers a greater freedom from relapses and complications; convalescence is more rapid; probably the proportion of "carrier cases" is reduced; and even after infection has been contracted, if inoculation is performed early, it reduces the virulence of the attack. Does not this successful application of a scientific measure for protecting soldiers from typhoid fever suggest the lesson of its wider application to those civilians who dwell in endemic areas or are judged to have run serious risk of infection?

COMPLETENESS OF PREVENTIVE MEASURES.

I wish that the time permitted me to detail the unprecedentedly complete measures taken by the army in the field and on the lines of communication—unprecedented even in civil practice in times of peace. The preventive inoculations performed; the work of diagnosis by Widal and blood-culture tests; the search work for carriers, even undertaken in motor bacteriological laboratories which can be taken nearer the front than the hospital or municipal laboratories are situated; the special hospitals established for the reception of typhoid cases; the system of inter-divisional notification and the protective inoculation of even civil contacts in areas occupied by our troops, &c. I can only say that it is all very impressive in its unprecedented completeness and efficiency, even to one who has spent his life in the civil work of preventive medicine; and I would add, deliberately, that if all these army measures were applied to the civil population the small and rapidly diminishing part which typhoid fever contributes to our general death-rate would in the near future be reduced almost to vanishing point.

To allow convalescents from typhoid fever, paratyphoid fevers A and B, and dysentery to mingle with the general population without taking suitable precautions would be dangerous, for in each disease a small proportion of the sufferers who have apparently quite recovered may still harbour, and occasionally discharge, the infective organism. They may be "carriers" of infection, though no longer sufferers from it; and the military authorities, realising this

danger, have taken measures of a precautionary nature that must be regarded as liberal.

It is not easy to assess the effect of such carriers in the dissemination of disease, for the "missed cases" may cloak their influence, but there are considerations and facts which call for a moderate estimate. Generally speaking, the germs of carriers are leading a kind of saprophytic existence, and therefore are not so infective as those associated with the acute disease. Moreover, it does not seem likely that the chronic "carrier" can be responsible for much of "the unexplained residue" of typhoid infection in civil communities, seeing that careful inquiries rarely furnish evidence of secondary cases, after an interval, in the families of previous sufferers. Such limited samplings as have been made of general populations abroad to determine what percentages are carriers have yielded results which must greatly exaggerate the facts in this country, where on a very liberal estimate they could hardly exceed 50 per 1,000,000 of population. But we must adopt the cautious view that carrier infection is always a real danger to guard against; and there have been many recorded instances where carriers engaged in the preparation of food for others have, in this indirect way, transmitted the infection of typhoid fever. What is *most* desirable is that all convalescents from typhoid and dysentery should be specially instructed and trained to observe a high standard of personal hygiene before their discharge from hospital, for their dissemination of infection depends mainly on defective personal hygiene.

THE DRINK PROBLEM.

Foremost among the sociological questions which the war has forced upon public opinion is the drink problem. Generally speaking, great restrictions have been placed upon the sale of intoxicants since the war began with the result of a considerable reduction in drunkenness and crime and our public-houses have become much better places of real refreshment. The available returns show that since the Central Control Board restricted the facilities for the consumption of alcohol the convictions for drunkenness in England have fallen between 40 and 50 per cent. If, with the facts before them, Great Britain, Russia, and France relax after the war the restrictions upon the sale of alcohol, vodka, and absinthe, then, indeed, must we despair of social progress. All political parties must combine in an effort to perpetuate the good effected, no particular party should be penalised by loss of votes by such action. All parties after war broke out combined against the common enemy, Germany; is it too much to hope that when peace comes all parties will combine against this even greater adversary?

There is a story told of a physician who had evolved a sovereign remedy which he dispensed himself in the form of a pill. On one occasion he was surprised (and maybe gratified) at the extraordinary demand for these pills by one household. On going into the matter, however, he discovered that this extraordinary demand was to be attributed to the fact that the pills in question exactly fitted an air-gun which was the much-prized possession of a youthful scion of the family. Sir, wise physicians have evolved sovereign remedies for several social evils during the war; are these destined to meet no better fate than expended ammunition from the pop-guns of party politics?

Speaking as one whose public duties as a medical officer of health have, for 25 years, brought him in close touch with all classes of the community, I affirm, with a conviction that is absolute, that there is no one factor of social evil which approaches to the abuse of alcohol in its dire effects upon human health, energy, and happiness. The war has impressed the lesson that much of the evil lies easily within our own control, and that this great source of national weakness in our empire may now be stemmed for all time. After the war our people will surely realise a better sense of values in living, and this will doubtless make them even more amenable than formerly to control for their well-being. It has been argued by the superficial economist that the State needs the revenue which it derives from alcohol; but it is a fact that every nation is a great loser by its unrestricted sale. Russia, wanting national vigour and money, had the wit to see that both were to be obtained by the prohibition of vodka; and I am informed that the result has been that industrial efficiency has increased over 20 per cent., and the

saving power of the people has grown from shillings to pounds.

VENEREAL DISEASE.

Alcoholic abuse and venereal disease are the two great twin evils responsible for social inefficiency and degeneracy. What lesson has the war impressed upon us with reference to the latter? The Royal Commissioners deliberately issued their Report during the progress of the great war, and the Government at once demanded a national effort to cope with this evil; yet it is probable that the anti-venereal campaign, long since overdue, would have been still further postponed had not the circumstances of the war widely impressed the lesson of its need. The subject is admittedly a difficult one, and our lack of courage to grapple with the problem in the past has not made it easier; but there can be no doubt whatever that the organisation of scientific measures against venereal disease will quickly lead to a great reduction in the loss and misery it entails. To quote the Royal Commission: "Now and in the years to come the question of public health must be a matter of paramount national importance; and no short-sighted parsimony should be permitted to stand in the way of all means that science can suggest and organisation can supply for guarding the present and future generations, upon which the restoration of national prosperity must depend." The particular measures which meet with official approval, in the meantime, are: 1. The provision of facilities for modern methods of diagnosis and treatment free to both sexes, under conditions to which no stigma will attach and professional secrecy will be maintained. I believe that if the scheme ended here the results would be meagre; but this provision is to be combined with efforts which strike at the root of the evil—namely: 2. An educational campaign to inculcate a higher moral sense among the people, to spread the knowledge of the prevalence and ravages of these diseases, and to impress the necessity for the most prompt and skilled medical treatment. Indeed, education is an essential weapon in any modern campaign of public health. Every case brought under proper treatment is a focus of infection neutralised. Is it too much to expect that those soldiers who have shown signs of such disease during the war shall be suitably examined before discharge; and, if found to be suffering from venereal disease in a *contagious form*, shall be detained until they are no longer a possible source of danger?

The war has furnished many impressive instances of the value of applied science in warfare. Will this circumstance lead to a wider recognition of its claims in times of peace, not only to industry but also to public health? For instance, the prompt and most efficient treatment of venereal disease is a preventive measure of prime importance; we have learnt much in recent years as to the most scientific means of such treatment; when these are made available to the population at large are the people still to be allowed to be tinkered by unqualified persons? Is this situation also going to be handled with courage?

INDUSTRIAL FATIGUE.

I would remind you of another sphere in which applied science offers a rich reward. In the sphere of industry, hygiene has already achieved some of its most notable triumphs in the reduction of preventable disease; but war has led to the direction of public attention to a further lesson which the hygienist has often sought to impress. I refer to the findings of the committee appointed to consider and advise on questions of industrial fatigue as affecting the personal health and physical efficiency of workers in munition factories and workshops. The accumulative effects of industrial fatigue not only damage the general health (this is reflected in sickness returns), they are also responsible for lost time and an unsatisfactory quality and quantity of work performed. As the more scientific organisation of industrial energy, in conformity with the physiological laws of life, is capable of raising the standard both of the workers' health and of his output, the importance of scientifically adapting the hours of labour to different kinds and circumstances of work cannot be denied. Now that there are plenty of actual working experiments and observations to support these conclusions of science, will employers of labour generally assimilate the fact (and profit by it) that the complicated human mechanism has its optimum conditions of work and that it is foolish and wasteful to ignore them?

CATARRHAL AFFECTIONS AND CEREBRO-SPINAL FEVER.

Another lesson of the war is that we have succeeded so little in impressing the importance of fresh air, by night as well as day, upon the masses that an open window at night is generally regarded with aversion by most army recruits, no matter whether they be town or country born; and unless after entering the army they are suitably trained they will allow the air of the huts at night to become, to put it mildly, enervating. The result is the nemesis of an excessive rate of sickness from catarrhal conditions of throat and lungs, from which the better-trained occupants of well-ventilated huts enjoy a marked comparative freedom, and the spread of infectious disease, including catarrh, influenza, lobar pneumonia, &c., is favoured.

The present allowance of 40 sq. ft. of floor space per man is ample, provided a sufficient number of windows (the only really effective means of ventilation in fully occupied huts) are kept open. The Army Council's action in December, 1915, to secure that two diagonally-opposite end windows, at least, should be kept open at night, doubtless effected much good; for did not the provision of better ventilated barracks and ships of war lead to a great improvement in the health of the two services many years ago—an improvement characterised by a great reduction of lung complaints, including consumption? The inability to solve the problem of a boot which at a moderate cost and with a fair application of dubbin will keep out the wet during a reasonable period of wear is also largely responsible (especially where the roads and paths are bad) for the high prevalence of catarrhal conditions so often to be noted during the cold and wet months. Everyone will agree that circumstances leading to better air conditions at night and drier feet by day must greatly reduce the prevalence of invaliding. These catarrhal conditions unfit men for their training, lower resistance to several forms of disease, and (as I believe) have been intimately associated with the high incidence of spotted fever among our troops. One cannot but be struck by the general coincidence of the prevalence of this cerebro-spinal fever and a high sick-rate from catarrhal affections; this may be due to a common predisposing cause, but it is probable that catarrhal conditions predispose to spotted fever, possibly exalt its virulence, and also favour its spread, and that they are sometimes abortive cases of the disease. Furthermore, histories of outbreaks of spotted fever in civil communities show that they are usually associated with overcrowding and the attendant lack of cleanliness and ventilation, and when spotted fever occurs we have learnt the value of at once allowing more cubic space, both to sufferers and contacts. And so it would appear that whenever catarrhal conditions are unduly prevalent amongst our soldiers, it would be a wise precaution to let this fact serve as a signal for increased ventilation, and to treat it as raising the possibility of the presence of more serious disease. The value of better ventilation is partly due to the cooler air thereby secured; for meningococci die so rapidly in cool air that the chance of the spread of spotted fever then becomes greatly reduced.

Let me add that this war has revealed in us a great capacity for national organisation. If such coördination is possible for *destructive* purposes it is possible for *constructive* purposes; and if, after the war the nation realises its prime duty (*Salus populi—Suprema lex*) this national capacity will find expression in a bold policy of public health, involving the coördination of all our available resources. The need for this, and the practicability of this, is, in my judgment, the greatest lesson that the war has taught us.

BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.—The following additional subscriptions to the Fund have been received:—

Doctors in the Belgian Congo (per M. Boulanger)—Dr. Marser, 200 fr.; Dr. Etienne, 500 fr.; Dr. Helberg, 500 fr.; Dr. Dubois, 50 fr.; Dr. Daniel, 100 fr.; Dr. DeLobelle, 500 fr.; M. Passantini (pharmacist), 100 fr.; M. Boulanger (pharmacist), 100 fr.—total, 2057 francs = £80.

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited. Surgical instruments should be sent to the Master of the Society of Apothecaries, Apothecaries' Hall, Blackfriars, E.C.

A Presidential Address ON LEGENDS AND LORE OF THE GENESIS OF THE HEALING ART.

*Delivered before the Section of the History of Medicine of the
Royal Society of Medicine,*

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MR. PRESIDENT AND GENTLEMEN,—We are apt to regard the history of medicine as a development of only modern growth; yet, if we look carefully into the oldest extant literature, we may see that even then the mind of man was occupied in speculation as to the origin of the art of medicine and in attempts to explain its progress to the stage at which he found it. Thus in the Rîj-Veda we find the prevalent belief in the divine revelation of the art tempered by the assertion that in the selection of foodstuffs and of medicinal simples animals were the preceptors of mankind. If we then pass on a thousand years to what we may call the threshold of scientific medicine, we shall find a Hippocratic treatise devoted to establishing the position of medicine as a natural corollary of dietetics. So early may we discern a strain of rational empiricism leavening the lump of theurgy and superstition, that bid fair to occupy the whole arena of early medicine.

We see, then, that ancient literature recognised three springs of medical knowledge—a divine source, an animal source, and a human source—and I propose to advert briefly to the first two of these, leaving the last for consideration on some future occasion.

BELIEF IN DIVINE SOURCE OF MEDICAL KNOWLEDGE.

Hindoo Medical Legend.—Hindoo medical legend affords a typical account of the divine exposition of medical knowledge, and of its transference to mankind. Like the Nahuans of ancient Mexico, the Hindoos recognised four successive ages in their chronology. In the first age mankind remained virtuous, happy, and free from disease, for had not Brahma, the supreme creative being, given him the four immortal Vedas—the Rîj, Yajur, Sama, and Atharva—containing all the knowledge required by mankind during the first age. It should be remarked, in passing, that these Vedas, replete as they are with samples of curative, as well as of preventive medicine, belie an origin in an age exempt from all disease. In the second age man fell away from virtue and disease appeared, to the curtailment of life and the impairment of memory. In the third age half of the human race was given over to depravity. In the fourth and present age the moral and physical corruption of man grew apace, so that disease flourished exceedingly. These four ages approximate closely to the four Biblical epochs of the primordial bliss of Eden, of the fall of Man, of the state of the earth before the Flood, and of the age that followed thereafter. Such compassion had Brahma for man's suffering in this fourth age that he produced a second class of books called Upavedas, or supplementary Vedas, one of which, the Ayur-Veda, was intended to teach the right manner of living, and the prevention and cure of disease, so that man might live happily in this world, in preparation for further happiness in a future state.

The Ayur-Veda, or Science of Life (*ayur* = period of living; *ved* = to know), is a sacred medical record of high antiquity, maintaining the general outline of the yet older Atharva-Veda. It shows that medicine in ancient India was part and parcel of theology, and that the same priests as controlled religion controlled also the treatment of disease; it was not till the end of the Vedic period that the physician began to shake himself free of priestcraft and to assume an independent individuality. Fragments only of the original Ayur-Veda survive, preserved in the Shastres or Commentaries on the Vedas. It is said to have consisted of 1000 sections, each of 100 stanzas. The divine Brahma, with truly human insight, realising the impossibility of learning so large a

work, provided an abridgment in eight parts. Nowadays, such is the quality of mercy, that when a System of Medicine is published in no more than seven volumes it is accompanied by an abridgment in one. Divine exponents are the first to handle these divine books of healing in a celestial entourage. Brahma, so say Charaka and Susruta, first instructed the god Dakhsa, the Prajabati, in the Ayur-Veda. This god compiled a book, the Chikitra-Darshana, which he communicated to the two Ashwins, or offspring of Surja, the Sun. These Heavenly Twins became the medical attendants of the gods, on whom they performed miraculous cures, and authors also of important medical works. Indra, King of Heaven, was so impressed by their wonderful cures that he induced them to instruct him in the Ayur-Veda.

Various legends exist telling of the transference of medical knowledge from heaven to earth. One relates how the Munis, or sacred sages, grieved at the melancholy spectacle of disease, met in council in the Himalayas and decided to ask the help of Indra, to whom in heaven they sent one of their number. Indra duly instructed their emissary in the Ayur-Veda, and on his return he related to the Rishis, or sages, the principles committed to him. In the strength of this knowledge the Rishis succeeded in living in happiness and health to extreme old age, wrought many cures on men, and wrote valuable works on medicine. Foremost in skill was Agnibesa, who instructed practitioners on earth, as the Prajabati did in heaven. Agnibesa's treatise was amended later by Charaka.

The number of different gods associated with healing in Hindoo mythology is due to the readiness with which, in India, one god supplanted another in popular favour.

One other Hindoo legend calls for mention, if only because it recognises the association of the serpent with medicine; in view of the prevalence of serpent worship in ancient India it is remarkable that more is not heard of it in Hindoo myth. The legend runs that "the Vedas were lost in the deluge, but were recovered by the great serpent Ananta. At the churning of the ocean by the gods and demons the water of the ocean was converted into milk, and then into butter, from which precious gifts were derived. Among these was Dhanwantari, the physician, or holy sage, the possessor of the water of life drunk by the immortals." Indra instructed Dhanwantari, in heaven, in the Ayur-Veda, so that he practised medicine with great success among the gods. But seeing the many maladies and the misery of mankind he came on earth to cure them. As king of Benares his miraculous cures gained such fame that the divine sages resolved to solicit his aid; Susruta was chosen to be the one instructed by him. To the conservative sentiment of Dhanwantari the Ayur-Veda seemed all-sufficing, but so voluminous that he charged Susruta to abridge and arrange it for easier comprehension. Dhanwantari began by expounding surgery, as formerly there were no diseases among the gods, and only wounds required treatment; his exposition is contained in the six books of Susruta, which seem to have been committed to writing about 500 A.D. The Commentaries of Charaka and Susruta supply the groundwork of the more recent systems of Hindoo Medicine; the disciples of Charaka became physicians, those of Susruta surgeons.

The Vedas present the usual blend of prayer and invocation, of magic and spells, familiar in primitive medicine; but through all this flows a thin stream of rational empiricism, touching, on the surgical side, such procedures as the extraction of arrows, the dressing of wounds, amputation of legs and their replacement by iron substitutes, castration, and removal of eyes; and on the medical side the action of numerous herbs and the healing power of water. The oldest, the Rîj-Veda, mentions no less than 1001 drugs, of which 760 were herbs. Vedic physicians lived as herbalists in houses surrounded by gardens of medicinal herbs, but they were instructed to seek knowledge also from shepherds and huntsmen, no doubt in the belief that they in turn will have learnt much from animals. It is noteworthy that many of the instruments described by Susruta are constructed after the form of beasts and birds. The anatomical knowledge of the Vedas is of the most elementary kind, and consists in little more than an enumeration of the chief component parts of the body, while their physiology stagnates in the expansive conception of breath as the source of vital power.

1 T. A. Wise: Hindu System of Medicine.

Greek Legend: Asclepius. No good purpose would be served by multiplying illustrations of the doctrine of the divine revelation of medicine from the records of Egypt, Assyria, Persia, Judæa, and other nations; in essence, they are everywhere alike. Greek legend, however, will repay fuller consideration, for the study of origins serves to throw light on its traditions and symbolism.

Among the gods of Greece, Apollo, son of Zeus and Leto, is the *doyen* of healers, while under his guidance Pæon ministered to the medical needs of the gods in Olympus. Other gods and goddesses are endowed with some share of the faculty of healing; thus, both at Athens and Epidaurus Athena bore the occasional surname "Health," and Asclepius was said to have received from Athena the blood of the Gorgon; that from the veins on the right side he used for the healing of men and the restoration of life, that from the veins on the left for their destruction. Asclepius is the medium by which Greek medicine came down from heaven to earth. In the earlier legend he stands out as a medical superman, and only later does he assume complete divinity. He was the son of Apollo and Coronis, who was slain by Artemis for infidelity to Apollo. As her body was about to be committed to the funeral pyre, Apollo snatched away the child Asclepius (whether by artificial abortion or by Cæsarean section we are not told), and gave him to Chiron, the Centaur, to instruct in the cure of diseases. One legend has it that Chiron acquired his knowledge from Apollo and Artemis; another, from his own observation and experience, gained while hunting on Mount Pelion. Hunters, as we have seen in Hindoo myth, were believed to enjoy special facilities for acquiring such knowledge; certainly acquaintance with the favourite foods of animals must have facilitated approach, and the baiting of traps and pitfalls. Homer² tells us that it was Chiron who instructed Achilles in the cleansing and healing of wounds, and Achilles transmitted his teaching to his friend Patroclus. Pindar³ attributes the use of charms as well to Chiron. So great was the skill of Asclepius, that we find Castor and Pollux, the Greek Heavenly Twins, insisting on his accompanying the expedition of the Argonauts. Ultimately he acquired the power of restoring the dead to life, but this achievement proved his undoing, for Pluto, in alarm for his kingdom, complained to Zeus, who slew him with a thunderbolt and cast him down to Hades. He left behind him two sons, Podalirius and Machaon, and at least four daughters, Hygieia, Panacea, Egrea, who married a serpent and was changed into a willow, and Jaso; from which of these Hippocrates, who was reputed to be a descendant of Asclepius, was derived, we are not told. The exploits of the warrior surgeons, Podalirius and Machaon, are recounted by Homer, and to his record we need only add, that to Podalirius was attributed the discovery of the art of bleeding. On his return from Troy he was driven by a storm to the shores of Caria, where a shepherd, learning that he was a physician, took him to the king, whose daughter was sick. He is said to have cured her by bleeding her from both arms, while for his fee he received his patient in marriage, along with a rich grant of land.

Asclepius was represented in Greek art with a serpent twined round a staff; a dog and a cock not infrequently figure among his emblems; on a coin of Epidaurus a dog lies beneath the throne on which he is seated. The cock is his habitual offering of sacrifice, and there are the inevitable legends to explain both serpent and dog. Asclepius, it is said, was shut up in the house of one Glaucus, who had sought his aid; while he was deep in thought there came a serpent, carrying a herb in its mouth, and twined itself round his staff. Asclepius killed the serpent, and used the herb to restore the dead to life. The presence of dogs in the sanctuary of Asclepius was explained by a legend that, when an infant, he was suckled by a bitch. According to an inscription found in the temple of Asclepius at Peiræus the dogs were fed on the sacrificial cakes. If we may credit Sextus Empiricus,⁴ the flesh of these sacred dogs was given to the patients to eat as medicine. As we shall see presently, the dog was credited with imparting to man knowledge both of herbs and of the healing of wounds; may be, then, its flesh was at one time eaten sacramentally, as embodying the god of healing. There was another legend that Asclepius had been suckled in infancy by a goat, and Pausanias blends the two legends into a story of his being suckled by a goat and guarded by a dog. According to

Ælian,⁵ dogs, goats, serpents, oxen, and pigs have the power of foreseeing an impending epidemic; it is perhaps worthy of note that three of these animals figure in the legends and symbolism of Asclepius. Inscriptions found in the temples of Asclepius record the healing of blindness by dogs licking the eyes, and the cure, by licking, of a tumour on the neck of a boy. Other gods of healing, for instance, the Sumerian Gula and the Babylonian Marduk, are represented accompanied by a dog.

The Serpent in relation to Healing.—The association of Asclepius with the serpent is of very great interest and importance. The association is not peculiar to him, for his Phœnician counterpart, Eshmun, likewise has a serpent as his symbol; so has his own daughter, Hygieia, who is represented feeding a serpent from a saucer. In Madagascar, too, Ramahavaly, the god of healing, was held to be the patron of serpents and to employ them in his service, for good or for harm. When his image was carried in public, each of his attendants held a writhing serpent in his hand, to inspire awe in the beholders. The Naga (serpent) tribes of Cashmir acquired their medical skill from the serpent, and the ancient Celts by drinking serpent broth. In India it is common to make clay or brazen images of the serpent, and offer sacrifice to them on behalf of the sick, just as Moses in time of pestilence set up a brazen serpent, that all might behold and be cured. The inhabitants of Southern Arabia regarded medicinal waters as haunted by serpent jinn, and in a certain African lagoon dwelt a serpent that relieved madness, and in an Algerian well one that cured sore eyes. There was a prevalent belief in the Middle Ages that the household snake, if not propitiated, would prevent conception.

In the legends of Asclepius we have already encountered the belief that the serpent has knowledge of herbs that can restore the dead to life, and we meet it again in the story of Polydus. The same belief is current in German, Italian, and Lithuanian folk-lore. A Syrian story⁶ tells how the king of the serpents restored three slain men to life by washing them with the waters of life; and Russian folk-lore represents the serpent as possessing a magic water that heals all wounds, restores sight to the blind, and vigour to the cripple. One Russian tale describes a wonderful garden, in which were two streams of healing and life-giving water, and round it was coiled a serpent. In Eden the serpent knew well the properties of the Tree of Life.

Sacred snakes were kept in the temple of Asclepius, and fed with honey-cakes; at Epidaurus certain native snakes were sacred to Asclepius. The temple snakes were credited with effecting cures by licking patients with their tongues. Similarly the blind emperor Theodosius received his sight by a serpent laying a precious stone on his eyes, and Siegfried became invulnerable by bathing in the blood of the dragon.

Besides the tales of miraculous cures by serpents, there is a crop of legends that seek to explain how man acquired the healing knowledge of the serpent. The serpent, by touching his ears or his lips, makes him to understand the voices of birds, who have the gift of foretelling the future, and the language of plants, so that they disclose to the hearer their secret medicinal properties. That serpents should know the language of birds was not unnatural, for they were believed to be generated from the blood of birds; this idea may be referable to the fact that serpents eat the eggs of birds. Yet another widespread belief held that the medical skill of the serpent could be acquired by eating its flesh; this is merely an illustration of the general belief that the properties of animal, man, or god may be acquired by eating the possessor.

Cicero says that the ancients explained the connexion of the serpent with Asclepius by the fact that, like the healing art, the serpent yearly sloughed its old skin and put on a new; but, in all probability, Asclepius was originally himself a serpent that subsequently became transformed into an anthropomorphic god, for whom conservative religious sentiment preserved the symbol of the serpent. This same conservatism is seen in the custom of sending a sacred snake from an existing sanctuary whenever a fresh one was established. It is not clear why the serpent is represented twined round a staff, just as it was coiled round an apple-tree in the garden of the Hesperides. Can this, too, be a symbol?—a symbol of some tree-spirit standing yet further back than the serpent in the pedigree of Asclepius?

² Illiad, XI., 827.³ Pyth., III.⁴ Ed. Bæke-, p. 174.⁵ Nat. Anim., VI., 16.⁶ Frazer: Pausanias, II., x., 3.

Zoologists tell us that the serpent is by no means an intelligent animal, despite the fact that it became the legendary embodiment of knowledge, and of medical knowledge in particular. The serpent of Genesis was more subtle than any beast of the field. The strange sinuous form, the mysterious gliding movement, the annual sloughing of the skin with its annual renewal, the weird fascination of its victims—all these must have served to endow the serpent with the homage of wonder that attaches, often so inaptly, to the unknown; and perhaps the deadly poison of the almost imperceptible bite may have seemed to link it appropriately to the science of herbs, that bring life or death to man.

BELIEF IN ANIMAL SOURCE OF MEDICAL KNOWLEDGE.

From this brief consideration of the serpent, to the ancients so much more of a god than an animal, we may pass to the kindred belief that man owed his knowledge of medicine to observation and imitation of the practices of animals.

The Dog.—From the evidence of geology we know that the dog was the first animal to be domesticated, and man must have soon observed its habit of licking its wounds, as cats and horses also do. He must have noted again and again how much more readily his dog's sores healed than his own, and not unreasonably attributed this to the licking. It is no matter for surprise, then, that we should find this method of healing wounds employed in the temples of Asclepius, by the tongues of dogs and of serpents. In quite recent years licking of sores by the tongue of a dog was held in repute both in Scotland and France.⁷ In the absence of any knowledge of the essential conditions that govern the healing of wounds, it was a natural conclusion that the licking was of therapeutic intent, and akin to the cleansing that was the central feature of the primitive treatment of wounds. There is no certain evidence that licked wounds of dogs heal more readily than those which cannot be reached by licking; and the contrast with the slower healing in man would seem to be due to the wide difference in immunity to sepsis between man and dog, for the dog is highly refractory even to subcutaneous injection of pyogenic organisms. There seems no reason to suppose that by licking their wounds dogs imbibe toxins that produce specific antibodies which assist them in the struggle against invading organisms, for they appear to have little or no need of such assistance. When one reflects how a child sucks an injured finger; how he puts his hand to a hurt leg or a bruised head; how hard each one of us finds it to keep his fingers from a scab, it seems not improbable that underlying all these tendencies is a common instinct to touch the injured part with the tongue or hand to determine the injury and, if possible, to remove the cause. If, in the case of the tongue, this should promote healing by the removal of dust and particles of dirt, this contingent benefit is merely incidental and does not indicate a definite therapeutic purpose.

There is a very ancient tradition that dogs, when they are ill, eat grass or standing corn to relieve the stomach by vomiting and purgation, and *Ælian*⁸ says it was from this that the Egyptians gained their knowledge of purgatives and emetics. Aristotle says that wolves do the same, and he might also have included cats. *Ælian* adds that dogs relieve themselves in this way of worms and of the excess of bile which causes rabies. The grasses that dogs eat have been identified as *Triticum caninum* (dog-wheat), *Agrostis canina* (brown bent-grass), and *Cynosurus cristatus* (dog-grass). From observation of my own and other dogs I feel sure that dogs do not eat grass, exclusively or even chiefly, when they are sick, and certainly not with the purpose of exciting vomiting or purgation. They are most prone to eat grass immediately on reaching green fields after a spell of town life; as a rule they cease to eat it, or do so very rarely, after a few days in the country. I have never seen the grass produce actual vomiting; it is usually hawked back, churned up with saliva, and has probably seldom passed far down the gullet. When not regurgitated I have never known it to cause diarrhoea; any looseness of the bowels is referable to the increased exercise that the dog takes in the country as compared with a town. The number of human beings who chew grass-bents is quite as large as

that of dogs that chew grass, and I have an impression that the habit is far more common among town-dwellers visiting the country than among country-folk. The human being certainly chews it because he likes the taste, and avoids swallowing it for fear of exciting vomiting. I strongly suspect that there is some subtle aroma of the grass that tickles the dog's palate, and seeing how much misery a dog suffers in the prospect and act of vomiting I am loth to believe that it entertains any therapeutic purpose.

VENESECTION.

The origin of venesection was another matter that excited speculation in the ancient world. Pliny⁹ says that the hippopotamus invented blood-letting and taught the art to man. This animal, he says, when surfeited with blood, seeks out the sharp point of a newly-cut reed, and pressing against it, opens one of the veins in the thigh, to its immediate relief; then it plasters the wound over with mud. Buffon, quoting P. Labat, repeats the story, substituting a sharp-pointed rock for the reed, and with the picturesque addition that the animal agitates its body to promote the flow, and when it thinks it has lost a sufficient quantity rolls in the mud so as to close the wound. With respect to the various observations involved in these statements, it is the case that the hippopotamus is very prone to exhibit wounds, in spite of the fact that in most parts the skin is two inches thick. These wounds seem to arise in two ways: most commonly as the result of fights, as male hippopotami in the wild state are constantly fighting, regardless of the pairing season, and a wounded animal is often furiously attacked by a comrade; but also as the result of rubbing themselves against any convenient projection, a habit that is common among animals in confinement, and even among such domesticated animals as cows, sheep, and pigs. Again, it is a habit of both hippopotamus and rhinoceros to roll in the mud of river-banks till they are plastered all over, and the mud would certainly adhere more readily to the abraded surface of a wound, giving the semblance of a purposive dressing of mud. The Andaman Islanders use mud in similar fashion as a protective covering, as some think to guard them from the attacks of mosquitoes; but this is probably only part of the truth, as mud is used as a dressing in countries where there are no mosquitoes, probably for no better reason than that it is always handy. In the case of the Andaman Islanders, dwelling as they are almost on the equator, it is more likely used as a protection against the direct rays of the sun. It is not without interest, in considering the association of the hippopotamus with venesection, that the hippopotamus is one of the animals that has a coloured sweat, carmine in its case.

The vampire bat has shared with the hippopotamus the credit of having taught mankind the art of venesection; such was the belief of the natives of Peru at the time of the discovery of that country. Peter Martyr¹⁰ describes the rescue from death of a man grievously stricken with pleurisy by the agency of one of these bats, after the human phlebotomist had failed to strike blood. Buffon cites several travellers who assert that large vampire bats suck the blood of men and cattle when asleep; they were believed to render the victim insensible to their bite by agitating the air with their wings and throwing him into a deep sleep. Doubt was thrown on these observations till Darwin, in his "*Voyage of the Beagle*," described how he actually saw a vampire bat sucking blood from the withers of one of the camp horses. These bats attack man less frequently than cattle, and usually when asleep and on an exposed foot. They have a capricious taste, for while one person may sleep in the open air with perfect immunity, another will be bitten almost nightly. This trait is common among blood-sucking animals, such as fleas and lice; whether it is due to difference in the blood, or to the relative thinness of the skin, or to some other cause is obscure. Females, on the whole, seem to be more susceptible to both lice and fleas than males, and I can testify that not one of the least blessings conferred on myself by a long period of connubial felicity has been complete immunity to fleas. The habitual food of these bats is insects, and blood is a prized but infrequent luxury. It is popularly believed in Peru that bites sometimes prove fatal, as the blood continues to flow after the bat has relaxed its hold; may be that, like the leech, it secretes an albumose in its saliva. J. G. Wood says that the wound is sore and

⁷ Gregor: Folk-lore of the North-East of Scotland, p. 127. D'Harace: *Erreurs Populaires et Propos Vulgaires*, II., 173.

⁸ *Ælian*: *Anim. Nat.*, V., 46; VIII., 9. Pliny: *N. H.*, XXV., 51. Aristotle: *Hist. An.*, IX., 6.

⁹ *N. H.*, VIII., 40, and XXVIII., 31.

¹⁰ *De Novo Orbe*, Decade 8, ch. vi., p. 30.

inflamed, but never fatal, but he appears to base this conclusion on an estimate of the amount a bat can imbibe, and takes no account of the subsequent loss.

Charlevoix,¹¹ in his "History of Paraguay," refers the discovery of blood-letting to the anta, an animal, "who, when he finds himself overstocked with blood, opens one of his veins with the point of a reed." The anta is the South American tapir, which Linnæus described as a sort of terrestrial hippopotamus. Lyddeker says that their hides are often thickly plastered with mud, probably as a protection against insects, and he adds that they are often found wounded by the claws of jaguars, which are their worst foe; these circumstances taken together show how this legend may have originated.

Yet another ascription of the art of bleeding is to the leech, of which Pliny says¹²: "The action of leeches is looked upon as pretty much the same as that of the cupping-glasses used in medicine, their effect being to relieve the body of superfluous blood, and so open the pores of the skin."

He is a bold man that would venture to assign to any individual, man or animal, the honour, if such it be, of having introduced venesection into medicine; but we must not forget that it may well have originated out of all connexion with medicine, as a part of primitive ritual, and that its place in medicine may be merely that of an ancient ritual survival. There is a well-defined stage in the evolution of sacrifice, at which, instead of sacrifice of the man himself, blood only is taken from him, and his life is spared. He is brought to the altar and gashed by the priest. A modification of this is met in the worship of the Phrygian Attis, where the priest draws blood from his own arm and presents it as an offering to the god; he is both priest and victim. In later stages an animal and then an animal's blood is substituted for a man and a man's blood, and later still a plant or the juice of a plant, for red wine is the blood of the plant.

Human sacrifice and ritual cannibalism seem to have reached their zenith among the ancient Mexicans. The ordinary mode of sacrifice was for the priest to slash open the breast and tear out the heart, then to fling the corpse to the worshippers to feed on in their homes. But at many of their religious fasts it was customary to draw blood from ears, eyelids, nose, lips, arms, legs, and body by thrusting the thorns of aloes into their veins and by passing sharp sticks through the tongue. With such practices prevailing among the priesthood, and with medicine in their hands, one may discern a portal by which blood-letting may have found its way into medicine.

The rationale of ritual blood-letting lies in the belief that the soul and the life of man reside in his blood. Even Harvey regarded the blood as the seat of the soul, and we find him in his *Prælectiones* refuting Aristotle, who had asserted the primacy of the heart, and laying it down dogmatically that the "soul is the blood." By eating the flesh or drinking the blood of the victim the worshipper eats the body or drinks the blood of the god, for by the act of sacrifice the victim becomes one with the god; the desire for complete union with the god, by commingling with his substance, is a dominant feature of early worship. The gods themselves are constantly rejuvenated by the blood of sacrifices, so that they may perform with unimpaired activity the vitally important functions incumbent on them. The Mexicans and Nicaraguans used to make effigies of their gods out of meal kneaded with human blood and devour them sacramentally. Blood was also used as a medium of divination, the Babylonian physicians drawing important conclusions from the behaviour of the blood drawn in blood-letting. It is interesting to find modern pathologists adopting hæmatoscopy afresh, as a means of divining morbid conditions of the subject.

Whatever the origin of blood-letting, we find the practice firmly established anterior to the earliest medical literature; though not mentioned by Homer, it was well known to Hippocrates, and was an habitual remedy in veterinary medicine in the time of Vergil.¹³

THE CLYSTER.—HIBERNATION.—DITTANY AS A VULNERARY.

The Egyptians are said to have learnt the use of the clyster from the ibis. Pliny¹⁴ says: "The ibis, by means

of its hooked beak, laves the body through that orifice, by which it is essential to health that the residue of the food should be discharged." The sacred ibis, though so common in the land of the Pharaohs during its time of greatness, has now disappeared from Egypt; it has a very long curved bill. No doubt the legend was derived from the habit the bird has of collecting with its beak the oil from the preen-gland, situated, as in most birds, above the rump; the oil is used for giving a gloss to the feathers and in water-birds is very abundant; when preening birds dip their bills into water and shake them, probably so as to rid them of any residue of oil. These facts would seem to explain the statement of Cabanés,¹⁵ that his friend, Dr. Ballion, had seen wader birds suck up water with the beak and carefully transfer it to their anus, and then shake their feathers and stand erect as though greatly relieved. Poultry, swallows, and other birds do at times remove faeces from their young with their beaks, but only if the faeces are obtruded and retained *in situ*; this, however, is probably merely an instinct of cleanliness. It is possible that the story of the ibis may have arisen from the coincidence that the hieroglyph for the ibis is identical with that for a Moon-god, in which character Thoth, the divine physician, was often represented. It deserves also to be mentioned that the use of the clyster for evacuating the bowels was a late development; its earlier use was as a means of introducing drugs and aliment into the body.

The hibernating bear inevitably excited the curiosity of the speculative; but far greater interest was displayed in the associated phenomena of hibernation than in the causes that induce the state. Topsel¹⁶ believed that it was the direct result of eating certain herbs that imparted the faculty of sleeping the whole winter without food and without sense of cold. In support of his belief he states that a cow-herd, who observed a bear eating a certain root, ate some of it himself, and was immediately seized with such a desire to sleep that he lay down and slept all through the winter, waking again only in the spring. Modern research suggests that the state is excited rather by the recurrent failure of the general food-supply than by the ingestion of any special foodstuff, and is limited to those species in which the power to maintain temperature at a permanent average height during sleep has been lost or never acquired.

Aristotle¹⁷ says that after hibernation bears eat arum, so as to open the bowels, which are empty and collapsed, and that they chew sticks of wood, as though they were cutting teeth, or as Pliny¹⁸ suggests, so as to sharpen their teeth; the latter adds the observation that their eyesight is dimmed, and that to relieve this they invade the nests of bees, so that the stings they receive in their throats may draw away the oppression from their heads. It is not easy to obtain reliable evidence of the behaviour of hibernating bears, as they do not hibernate in captivity, as in our own Zoological Gardens. We do know, however, that in the wild state the bowel is mechanically obstructed during hibernation by a plug technically known as "the tappen," which is composed almost entirely of pine-leaves and the various substances which the bear scratches out of ants' nests; this tappen is discharged on the return of activity in spring. This, no doubt, is the basis of the tradition that the bear seeks special herbs to excite purgation. Elian¹⁹ holds that the purgation restores the bear's power of taking food, but Topsel conceives it to have the further purpose of improving their general health, so as to render them highly savage during all the time that they are guarding their young. The eating of ants and of honey was believed to be also designed for the purpose of opening the bowels. Pliny, however, fancies that ants are eaten to counteract the effects of the mandrake, when it has been taken inadvertently. This whole sum-total of credulity has provided practical medicine with no hypnotic at all, and no laxative more active than honey, even if its use could be referred to this source. In raiding a nest of bees for honey the bear is quite regardless of the numerous stings it receives, which seems to have induced Pliny's belief, mentioned above, that the stings were solicited for a definite purpose; perhaps some colour was lent to the belief by the knowledge that bears, especially in confinement, are very prone to ophthalmia, and are often

¹⁵ Bulletin Général de Thérapeutique, 1912.

¹⁶ History of Four-footed Beasts, 1658.

¹⁷ Hist. Anim. VIII. 7, and IX. 6.

N. H., VIII., 52.

¹⁹ Nat. Anim., VI., 3.

¹¹ Lettream: History of the Origin of Medicine.
¹² N. H., XXXII., 42. ¹³ Georgics, III., 457, seq. ¹⁴ N. H., VIII., 41.

totally blinded by it. The grizzly bear's habit, when coming out of hibernation, of standing upright against a tree and scoring the bark with its claws calls for passing notice, as affording a clue to the legend of the chewing of sticks. This primitive method of manœuvre is doubtless directed to reducing the redundant growth of the nails to serviceable proportions.

When Aeneas²⁰ was wounded by an arrow, Venus sped to Crete to fetch the herb dittany, wherewith Iapix should heal his wound. Deer and goats well knew its value as a vulnerary, to remove arrows from their wounds. It is difficult to conceive a stage of mental development at which man employed herbs in preference to his hands for the extraction of arrows, as even animals possess this power in a considerable degree. Elephants have been seen to extract weapons with their trunks, monkeys extract thorns with considerable skill, and dogs remove splinters and thorns, on occasion, with their teeth, though they often present the damaged part for the attention of their master, when they cannot effect it with their teeth.

THE SECUNDINES AND PARTURITION.

Such a wealth of legend has gathered around the disposal of the secundines, and indeed around all the phenomena of parturition, that a cursory review of the whole subject will best serve our present purpose. Pliny²¹ says that hinds eat the herb seseli and the leaves of the hart-wort before parturition, to make labour easy; and that immediately after delivery they eat the two herbs seseli and aros together, so that their milk may be impregnated with their juice before they suckle their fawns. Aristotle²² adds that the hind swallows the after-birth immediately after parturition, and that it is impossible to prevent her, as she catches it before it reaches the ground. He surmises that the placenta has medicinal properties. Apparently it was in virtue of its purgative²³ action that seseli was believed to aid parturition, but, on the other hand, Pliny says that the action of hart-wort is to arrest looseness of the bowels. It is impossible to reconcile these contradictory therapeutics; suffice it to say that the oral transmission of medical lore is not conducive to its accuracy.

With regard to the mare, Pliny²⁴ writes that "the colt is born with a poisonous substance on its forehead known as hippomanes and used in love philtres; it is of the size of a fig and of a black colour. The mare devours it immediately on the birth of a foal, and until she has done so she will not suckle it." According to Cuvier, a concretion is sometimes found in the liquor amnii of the mare which she instinctively devours, as other quadrupeds do the after-birth, but I have failed to obtain corroboration from horse-breeders, and incline to Aristotle's opinion that all the stories about hippomanes are old wives' tales. Probably the whole fiction arose out of the mare eating the placenta. Vergil²⁵ seems somewhat uncertain as to the exact nature of hippomanes, for in one passage he accepts the description given by Pliny, while in another he describes it as the vulval discharge of a mare in season.

The belief in the galactagogue properties of the placenta clearly prevailed in Pliny's time, as it does even to-day, in spite of a good deal of experimental evidence in a contrary sense. Lederer and Pribram²⁶ claimed to have produced within a few minutes of the injection of placental extract an enormous increase in the amount of milk secreted during a period of two or three minutes soon after the injection. This may, however, have been produced merely by a temporary and more rapid evacuation of the mammary reservoir by rise of pressure from increased muscular tonus. Dixon and Taylor²⁷ claimed to have found such pressor substances, but Rosenheim²⁸ showed that they were products of putrefaction in the placental extracts employed in their experiments.

Lane-Clayton and Starling²⁹ obtained negative results, as regards increased activity of the mammary glands, from injection of placental extract. Their experiments, however, seemed to show that the growth of the mammary glands during pregnancy is due to the action of a specific chemical stimulus produced in the fertilised ovum, which is increased in amount *pari passu* with the growth of the foetus. They

suggest that lactation is due to the removal of this substance, which must be regarded as exerting an inhibitory influence on the gland cells, hindering their secretory activity and furthering their growth; in that case it is probably also a chemical product of ovarian activity that stimulates growth of the breasts. Biedl and Koenigstein³⁰ in the main confirmed the findings of Lane-Clayton and Starling.

Frank and Unger's³¹ experiments led them to think that the changes in the breasts, both at puberty and in pregnancy, depend entirely on ovarian activity and have nothing to do either with foetus or placenta. They consider that the changes in the breasts, found by Lane-Clayton and Starling after injection of foetal extracts, do not exceed the physiological degree of variation in size occurring normally in the breasts of virgin rabbits.

Basch³² suggested that some substance elaborated in the placenta activates the ovary, which in turn stimulates growth of the breasts, with ultimate lactation; but other experimenters have not confirmed him. The general tenor, then, of recent experimental evidence is decidedly opposed to the ancient belief that animals devour the placenta so as to excite or to increase secretion of milk. If, then, primitive man acquired the habit from observation of animals, he was following a blind guide.

PLACENTOPHAGY.

Much interesting evidence is available as to the primitive method of disposing of the placenta. In 1556 the missionary Jean de L ry³³ reported that the Brazilian natives devoured the placenta, and this was subsequently confirmed by Engelmann and Rodet. Raynal says that, in America, the Topinamboos and the Tampuya devour the after-birth; the same practice persists in certain parts of the Soudan. About the year 1700 A.D. the traveller Gemelli Careri observed that among the Yakouts, a people of Russian Asia, the father took the placenta immediately after delivery, had it cooked, and regaled his parents and friends. But there is no need to go so far afield for evidence of this mode of disposal of the placenta, for Reverdin³⁴ records an instance in his own practice. A woman, immediately she had been delivered, begged to be permitted to see the placenta, which was lying steaming on a cloth. Reverdin handed it to her unsuspectingly, and she expressed surprise at its appearance and examined it closely. Suddenly she seized it, and with a wild cry devoured it. Next day he asked her why she had done it, and she told him that a wild desire to do so had overcome her. "Do you still crave for it?" asked Reverdin. "Pshaw! What a disgusting idea!" she replied. "I cannot conceive how I came to do it." Other instances of the kind are to be found in contemporary medical literature,³⁵ and no doubt the occurrence would be much more frequent were not the placenta so sedulously secreted and so expeditiously disposed of by the midwife.

It is difficult to appreciate how the custom arose of the husband devouring the placenta instead of the parturient wife, but the same might be said of the couvade; here, again, tradition seems to afford a clue. In Chinese medicine placenta is used as an aphrodisiac. Suetonius says that Cesonia excited the sexual passions of her husband Caligula by administering it to him in a potion; and in recent times women used to keep the umbilical cords of their female children so as to excite their lovers. Placenta figured in the pharmacopoeias of the seventeenth century for use as a galactagogue, an aphrodisiac, a laxative, and a remedy against sterility, chlorosis, and uterine disease. In all these uses one detects the trail of sympathetic magic and no trace of rational pharmacy. For a similar reason powdered egg-shells found a place in the old pharmacopoeias, regardless of the fact that they are of extra-embryonic origin; they do, however, appear to exercise some beneficial physiological influence, for there is some evidence that they help fowls to put on weight; may be that they supply calcium salts in a readily assimilable form. A French writer has suggested that they act on the fowl by stimulating its generative system, and he has no doubt of the aphrodisiac action of the placenta when devoured by the

²⁰ Zeltschrift f. Exp. Path. u. Therapie, 1910.

²¹ Arch. of Int. Med., 1913.

²² Monatschrift f. Kinderh., 1909.

²³ La Placentophagie, Journal de M d. de Paris, Sept. 7th, 1902.

²⁴ Compt. rend. Soc. d'Obst. de Gyn c. et de P diatr. de Paris, 1904, vi., 91.

²⁵ R. Besson: La Placentophagie, Clin. Obstet. Rome, 1905, vii., 145; and L. Grosse: Ueber Placentophagie, Med. Woch. Berlin., 1906, vii., 212.

²⁶ Kneld, XII., 411 seq. Arist., H. A., IX., 6. Pliny, N. H., VIII., 41, and XXV., 53. ²⁷ N. H., VIII., 50, and XX., 18.

²⁸ Hist. Anim., IX., 6. ²⁹ J. E. H. N. A., XIII., 50.

³⁰ N. H., VIII., 66. ³¹ Kneld, IV., 515. Georg., III., 280 seq.

³² Arch. f. Physiol., 1910. ³³ Brit. Med. Jour., 1907.

³⁴ Journal of Physiology, 1909. ³⁵ Roy. Soc. Proc., 1906.

female rabbit and guinea-pig. If we admit the existence of such aphrodisiac properties even in imagination, it suggests a reason for the male feasting on his wife's placenta. In India, where fertility is more prized than in this country, aphrodisiacs occupy a prominent place among medicinal remedies; it is only in the last few years that they have fallen out of the English text-books.

With wild mammals it is the rule for the mother to eat the placenta. Dr. Chalmers Mitchell assures me that this is the case with deer, wild asses, zebras, wild cattle, marmosets, and rabbits. Apes do not breed in captivity, so that nothing is known of their placental habit. There is a striking contrast with many domestic animals in the treatment of the placenta. Mares and ewes hardly ever eat the placenta, but instances of each are known. Cows vary greatly; thus a breeder of South Devons tells me that, left to themselves, 50 per cent. eat it, while an owner of cross-bred stock speaks of it as exceptional. The evidence of rustic cowmen is tainted by their ingrained conviction that every cow would eat it, given the opportunity. Sows, cats, and bitches in the vast majority of cases eat the placenta. In the case of the sow the last two or three pigs are often discharged along with the placenta, and she is very apt to swallow them along with it, no doubt mistaking them for placenta. Sows sometimes eat their whole litter; it is said that they never do so after they have once suckled their young pigs; this throws a curious light on the mental process by which a sow becomes aware of the identity of her young. Cats, marmosets, and rabbits, all of which eat the placenta, are also liable to eat their young. Birds, at times, eat the shells of the hatched egg, though the more usual procedure is to eject them from the nest, and often to carry them to a distance from the nest.

It is interesting to note how much more frequently the placenta is eaten by wild than by domestic animals, and I would suggest that the purpose is to conceal all trace of the existence of their young from predatory foes. Secretiveness with animals, and with wild animals in particular, dominates every detail of parturition. They hide themselves away, and if watched curl themselves up so that it is exceedingly difficult to follow their procedure. As soon as the young are born they endeavour to keep them out of sight of an intruder by interposing their own body. Can this, too, be the explanation of the habit among the carnivora of eating the dung and lapping the urine of their young, a habit that persists in the domestic cat and dog? Animal motives, like human motives, no doubt are often mixed, and what serves the end of cleanliness may equally serve other ends as well. I had expected to find some trace of this habit among puerperally insane women, but have not succeeded, and one would hardly look for it among the sane at present standards of cleanliness and civilisation.

POSITION IN PARTURITION.—TREATMENT OF UMBILICAL CORD.

This is but one instance of a striking uniformity of habit among primitive men and animals in the procedure of parturition; in the matter of posture we shall find the same. The recumbent posture in parturition is by no means universal with the human female. Only a few years since, and perhaps still, it was a common practice in some country districts for a woman to be delivered standing, and supporting herself with her arms on the end of the bed; some midwives indeed insisted on the erect position. I retain a most vivid recollection of my first attendance on a woman in labour and her restless promenade of the room, for all the world like a hungry lioness pacing to and fro inside the bars of her cage; rupture of the membranes occurred and the head of the child was actually protruding before I could persuade her to lie on the bed. In native races it is common for women to be delivered on the march with supreme ease and with little or no pain. Peter Martyr³⁶ has a brief picture of parturition which illustrates this matter: "When the women know it is time to be delivered of the child they go into the neighbouring wood, and there taking hold of the boughs of any tree with both their hands, they are disburdened without the help of any midwife, and the mother herself, speedily running, taketh the child in her arms, and carrieth it unto the next river. There she washeth herself and rubbeth and dippeth the child often, and returneth home again, without

any complaint or noise, and giveth it suck; and afterwards, as the manner is, she washeth herself and the child often every day." This helps us to understand why Leto clasped a bay tree when about to give birth to Apollo and Artemis, and the prevalence of the same practice in Sweden in former days. Frazer suggests that the parturient woman was seeking moral rather than physical support, in an appeal for an easy delivery and avoidance of the perils of child-birth, addressed to the tree-spirit embodied in the tree, who was credited with power over the fertility of women. Our museums also and illuminated manuscripts testify that the recumbent posture in parturition has only been arrived at by a gradation of stages, the sitting posture having been long in vogue.

Passing to animals, we find a general statement of Aristotle³⁷ that "quadrupeds, as a rule, lie down for parturition, and in consequence the young of them all come out of the womb sideways. The mare, however, when the time for parturition arrives, stands erect, and in that position casts its foal." As a fact, mares usually foal lying down in this country, but it must not on that account be assumed that Aristotle's statement is necessarily wrong. For example, among cows posture seems to vary to some extent with the breed; as a general rule, they calve lying down; but whereas this is the case with South Devons, Devons often calve standing. In difficult labour a cow often gets up from lying down, when the calf is half-born, probably so as to facilitate labour. Ewes, as a rule, lamb lying down on one side; exceptionally they stand, and the same is the case with sows, bitches, and cats. Speaking generally, then, the domestic animals, whose habits have been most likely to influence man, adopt a recumbent posture, like the human female, but there are many exceptions to the rule.

In animals such as mares, cows, ewes, and sows the cord is practically always severed as the animal rises, or, if she is delivered standing, by the descent of the young; with mares the cord not infrequently breaks close to the navel, and there is danger of losing the foal from hæmorrhage. With carnivora the cord is frequently intact, and the animal divides it with her teeth before she rises. Wild animals are so secretive over parturition that, even if one be present, it is difficult to see what they are doing; rats certainly, like bitches and cats, divide the cord with their teeth; and Mr. Pocock, of our Zoological Gardens, informs me that he is under the impression that this is true of most carnivora. A primiparous bitch is less expert than one that is multiparous in severing the cord, and is apt to sever it too close to the pup's body. Foals are not infrequently born in their membranes and die of suffocation, but in the case of a calf so born the mother ruptures the membranes by licking them with her rough tongue. This is only one illustration of the far stronger maternal instinct of the cow than of the mare, and does not bespeak a purposive intelligence.

In the treatment of the umbilical cord I have succeeded in finding in man a vestige of approximation to the animal habit. One of the members of this section, who for many years conducted a large general practice in South Wales, tells me that he was cognisant of an instance in which a young idiot woman divided the cord of her infant with her teeth. I have encountered no other instance either in literature or by personal inquiries, and I should value greatly other information on this head, and, indeed, on any matters touched on in this paper. Lettsom says that native South American women commonly divided the cord with a fire-brand, which cauterised the vessels, so that they needed no ligature.

To the ancients it seemed reasonable to explain similarity of practice by the assumption that man had taken a lesson from animals, but for us it is more reasonable to suppose that we have to do with the maintenance of a habit acquired before the partition of the common ancestral tree.

THE TROCHILUS AND THE CROCODILE.

The toilet of the mouth has its legendary origin in the story of the trochilus, which serves also to illustrate the danger of incorrect inference from correct observation. Herodotus, Aristotle, Aelian, and Pliny all tell it in much the same terms. Aelian³⁸ says that leeches invade the mouth of the crocodile, as it swims with it open, and cause the animal much discomfort; feeling the need of the medical aid of the trochilus, it swims to the bank and lies there with its jaws agape, whereupon the bird enters and removes the leeches,

³⁶ Dec. 7, ch. ix., p. 275.

³⁷ H. A., VI., 22.

³⁸ Nat. Anim., III., 2.

while the crocodile remains perfectly still so as not to harm it. Pliny suggests that the animal opens its jaws to admit the trochilus because it enjoys the titillation of its movements. Buffon cites a traveller who actually saw the bird enter the crocodile's mouth, which closed behind it each time, and opened again after a while for the bird to emerge. Topsel says that the beast reopens its mouth because the bird carries sharp thorns on its head which prick the crocodile's palate; and the modern Egyptian, according to Leith Adams, says that the reminder is conveyed to the crocodile by the horny spurs of the bird, which Brehm identified as the Egyptian plover. One can scarcely doubt that the performance is due to the bird's quest for palatable food and not to the intelligent demand of the crocodile for the effective scavenging of its teeth.

DISORDERS OF VISION.

A rich crop of legend grew up around the properties and disorders of vision. Men were puzzled by the closed eyelids of the young, and suggested various explanations of the mode by which they acquired sight. Pliny³⁹ says that puppies are born blind, and that the length of time before they acquire sight depends on the amount of mother's milk; so that the more numerous the puppies the later do they acquire it. In another passage⁴⁰ he states that the swallow employs celandine as an eye-salve to give sight to her young, and that it can restore vision even when the eyeballs have been plucked out. The plant blossoms, he informs us, at the time of the swallow's arrival and withers at its departure. Probably it is from these facts, approximately correct as they are, that it acquired its botanical name "chelidonium," from the Greek *χελιδών* = a swallow. Pliny recommends its juice blended with Attic honey as a sovereign remedy for films of the eyes, and its virtues have been perpetuated in the use of the term "chelidonia" for eye-salves. The almost dazzling brilliance with which the flower in early spring peeps out from its sombre green cushion of leaves may well have suggested its sympathetic usefulness for dim eyes. Pliny⁴¹ asserts categorically that it was from the swallow that man learnt the use of celandine for affections of the eye, while Ælian regrets that all their labour to prepare such an eye-salve as swallows use has been in vain.

Hawkweed also enjoyed high repute in diseases of the eye. Pliny says that the hawk distils its juice into her eyes to prevent any dimness of vision, and mixed with human milk he recommends it as a cure for all diseases of the eye. It was necessary to postulate the employment of some such specific remedy to explain the marvellously keen sight of the hawk's eyes. Ælian⁴² has it that "physicians use this same remedy for eye diseases, nor do they deny that they have learnt it from birds, but prefer to profit by the knowledge."

Fennel, too, stood high in favour in the treatment of diseases of the eye. Both Ælian and Pliny⁴³ were aware of the fact that when a snake changes its skin the discs over the eyes peel off with the rest, and appear as dry lenses in the slough. Pliny seems to say that the snake takes fennel internally to aid exfoliation, and also applies it locally to the eyes to sharpen its sight, and it was this knowledge that led to its use by man as an eye-salve. In later times euphrasia was used similarly in eye diseases, but according to the doctrine of signatures, as it has a black spot on its corolla, resembling the pupil. When Michael in "Paradise Lost" opens the eyes of Adam to see the future of the world and of his own progeny therein, he

purged with euphrasia and rue
The visual nerve, for he had much to see;
And from the well of life three drops distilled.

Ambroise Paré asserts that the operation for cataract was discovered by means of a goat with a film overlying the pupil tearing off the film accidentally when scratching itself against a thorn, and in consequence recovering its sight; but Ælian and Pliny⁴⁴ reject the accidental character of the goat's discovery. Pliny says that the female goat uses the point of a burrush and the male the thorn of a bramble for its manipulations, but neither he nor Ælian appreciates the nature of cataract, as Pliny conceives that the cure is due to escape of blood that has surcharged the eyes, and Ælian to the escape of some morbid humour.

The phenomenon of nyctalopia in man was known to the ancients, and goat's liver was eaten for its cure, as it was believed that goats could see by night as well as by day; but in the discussions of the non-medical writers of antiquity there already exists a confusion as to the meaning of the term, some taking it to mean "able to see only at night," and others "not able to see at night." It is an interesting example of the widely prevalent organo-therap of early medicine.

ANIMAL TRANSFORMATION.—FOREKNOWLEDGE OF WEATHER.

Melampus is said to have learnt the purgative action of hellebore from observing its action on goats. He used the drug with success in the cure of the daughters of Proetus, King of Argos, who fancied themselves metamorphosed into cows, to gratify the anger of Hera. Accounts differ as to whether Melampus sent them the milk of goats that had eaten hellebore, as nowadays one might send rodagen, or gave hellebore itself, joined with certain superstitious remedies. Having regard to the action of the drug, the wonder is that the ladies were not still further confirmed in their hallucination. In this fabulous setting we catch a glimpse of the old-time belief in animal transformation, which found its most extravagant expression in the state of lycanthropy. Ovid⁴⁵ describes the transformation of Lycæon into a wolf. Aetius, Avicenna, Oribasius, and others speak of it as frequent. Burton⁴⁶ descants on the wide prevalence of this mental disorder in olden times. The idea of the were-animal struck its deepest roots in Scandinavian and North-German soil; men fancied that by donning the skin of a wolf they could become wolves at pleasure. It is less common in Greek and Latin folk-story, but a familiar example is to be found in the eighth Eclogue, where the lover, by using Pontic herbs, is enabled to see Moeris transformed into a wolf. Lycanthropes, like wolves, often lay hid during the day and at night wandered abroad, haunting the graveyards and barking and howling.

Knowledge of the action of hellebore was not the only gift bestowed on Melampus by animals. His gift of divination he owed to some serpents that he rescued from death and reared; they in return cleansed his ears while he slept, with their tongues, so that when he awoke he understood the language of birds, and so learnt the mysteries of the future that it is their privilege to foreknow. Melampus had at least one valuable remedy in his armamentarium for he cured one of the Argonauts of sterility with steel drops, administering the rust of iron in wine for ten days. In ancient medicine prognosis was esteemed as highly as healing, and man desired to share with animals, and especially with birds, their faculty of foreknowledge. Nature seemed to have endowed them with power to presage the weather by observing the skies—a gift of first importance to a primitive agricultural community. Vergil⁴⁷ mentions, as foretelling the coming of rain, the flight of cranes and swallows, the heifer scanning the face of the heavens, the clamour of rooks and of ravens, and the plaintive chatter of frogs in the fens. In Germany even now green-frogs in tall glass bottles are used as barometers; in fine weather they ascend, in wet weather they descend little wooden ladders, each step of which marks a degree. Buckland succeeded in using leeches similarly for the same purpose. Many an old maid to-day in London will tell you that her cat keeps close curled up before the fire when snow is coming.

OTHER EXAMPLES OF BELIEF OF KNOWLEDGE GAINED FROM ANIMALS.

Besides foreknowledge of the weather, man was believed to have acquired much other useful knowledge directly from animals. The ancient Egyptians believed that the art of writing had been learnt from the sacred baboons that were kept in their temples; when a fresh baboon was admitted, its fitness was tested by the priest putting writing materials into its hand and calling upon it to write. Topsel suggests that the practice of circumcision may have been learnt from them, as the young are brought forth "circumcised, at the least wise in some appearance; whereunto the priests give great heed to accomplish and finish the work begun." There is no obvious anatomical peculiarity in the prepuce of the young monkey, unless it be its great laxity permitting ready

³⁹ N. H., VIII., 62. ⁴⁰ Ib., XXV., 50. ⁴¹ Ib., VIII., 41.

⁴² Nat. Anim., II., 43.

⁴³ Ib., IX., 16; and N. H. VIII., 41, and XX., 95.

⁴⁴ Nat. Anim., VII., 14; and N. H., VIII., 76.

⁴⁵ Metamorph., I., 7.

⁴⁶ Anatomy of Melancholy, ed. 1804, vol. I., p. 13.

⁴⁷ Georg. I., 378 seq.

protrusion of the glans penis, to explain this idea, and such evidence as we have seems to point to the origin of circumcision as not a medical or sanitary measure, but rather as a feature of primitive sacrificial ritual. These sacred baboons were held to have originated the division of day and of night into twelve equal parts, so as to afford a model for construction of the water-clock.

There was a wide-spread tradition that music had been learnt from birds, and chief among them the nightingale; in Hindoo poetry it is the kokilas, the Indian cuckoo, that teaches melody. Birds are often credited with bringing down fire from heaven; in Polynesia it was a red pigeon, in French folk-lore the wren. The tale runs⁴⁴ that all the other birds, except the owl, contributed a single feather apiece to replace the scorched plumage of the wren, so as to keep it warm in the coming winter. For its ill-nature the owl was condemned to eternal seclusion during the warm day, and to perpetual suffering from cold during the night, and the other birds maintain the punishment by pestering it if it appears in sunshine. Every nation has its Prometheus; in Greek legend it was a man, among the North American Indians a stag; but the myth never tells how the fire was produced, in conformity with the circumstance that the maintenance of fire accidentally produced seems always to have antedated the discovery of how to produce it.

It would be interesting to hear the chatter of the native East African over the domestic meal after watching an aeroplane soaring in the sky; he would probably recognise in its movements, its outline, and its mode of propulsion another gift of knowledge from birds to man, confusing what is in part due to imitation with what appears to be due to instruction. Ælian⁴⁵ asserts that birds know all the remedies that man employs; he cites the application of marjoram to their wounds by partridges, storks, and pigeons. Pliny,⁴⁶ too, gives a list of purgative herbs used by birds, but, if we can be sure of their identity, few, if any, possess the properties claimed for them.

The sedative properties of lactucarium, or lettuce, were widely accepted; Aristotle and Ælian⁴⁷ state that it is used by the dragon to relieve a distended stomach. Venus was said to have lulled her grief at the death of Adonis and repressed her desires by throwing herself on a bed of lettuces. Experiment has failed to show any sedative action in the juice of lactuca, and belief in its hypnotic properties is probably due to the similarity in appearance and smell to the juice of the poppy.

Fallopian⁴⁸ asserts that the ape taught man the laxative properties of cassia, and in view of the fondness of monkeys for fruit it is not impossible that man may have observed its laxative effect.

Cytisus⁴⁹ was believed to possess important galactagogue properties, and was given to cattle for this purpose. Aristomachus, an Athenian medical author, recommended that an infusion of the plant, mixed with wine, should be given to nursing women when their supply of milk was deficient. The active principles of cytisus are sparteine and scoparin, neither of which is known to possess galactagogue powers. Scoparin produces some amount of diuresis, probably by action on the renal epithelium. Possibly the flow of milk might be increased if the juice were given in great dilution, or if its bitterness induced free drinking of water.

Dogs were said to have taught man the use of pellitory for expelling calculi; one wonders whether the belief may have arisen in an attempt to explain the name.

ANIMALS AND KNOWLEDGE OF NATURE OF FOOD.

If man learnt the use of drugs from animals, he must have paid a price in some cases for his knowledge. Thus horses eat aconite with impunity; birds, rabbits, and many herbivora belladonna, and its effect on horses and donkeys is but slight. Goats, sheep, and horses eat hemlock without ill-effect, yet it poisoned Socrates. Henbane has little effect on sheep, cows, pigs, and pigeons, and ipecacuanha does not excite vomiting in rabbits.

Animals seem to acquire their knowledge of poisonous plants from experience, and not by any innate instinct; our domestic animals, when transported to other countries, at first eat poisonous plants, which they learn afterwards to avoid. Snell observed that strange sheep frequently fell

victims to the poisonous hellebore that grows abundantly in the valley of the Ahn, but that it is carefully avoided by the sheep of the neighbourhood. Pliny⁵⁰ was evidently aware that cattle did avoid certain poisonous plants, and he instances the anagallis as one; but he goes further and asserts that if they eat it by mistake they have a remedy at hand in a plant that is an antidote. Lambs and calves, grazing in the same field as their mothers, are far more prone than they to eat poisonous plants. Morgan⁵¹ concluded from observations of feeding young birds with various caterpillars, beetles, and worms, that, in the absence of parental guidance, young birds have to learn by experience what is good to eat and what is not, and that they have no instinctive aversions. At first they peck at everything, but once they have found that a particular thing is distasteful or harmful, in future they entirely avoid it. Tegetmeier found that pigeons reared exclusively on wheat or barley would starve before eating beans; but if a bean-eating pigeon were introduced among them they would soon imitate and adopt the habit, instinct yielding to experience; in the same way fowls sometimes refuse maize, until they are placed with maize-eaters, when they not only eat it, but become exceedingly fond of it. Newly caught birds are apt to starve unless the cage-food is mixed with food to which they are accustomed. Each bird seems to make its own observations, its own experiments, and its own discoveries in the matter of food, and the rapidity with which knowledge acquired may be propagated is shown by the readiness with which the habits of other members of the species are imitated.

The taste for meat is not infrequently acquired by herbivorous animals, and once acquired may amount to a veritable passion. Parrots⁵² that have lived on insects and berries have been known to acquire such a liking for meat that they have actually pecked to death animals as large as sheep and porpoises, so as to eat their flesh in place of their habitual food. Horses will take to flesh-eating, and have been known to snap up young pigeons and chickens; meat diet is said to render them savage. Reclam⁵³ saw squirrels and rabbits gnaw greedily bones thrown to them, though they had abundance of vegetable food; both Darwin and Brehm record instances of cattle taking to a diet of fish on certain islands when pasture failed them.

FOODSTUFFS IN PRIMITIVE PHARMACY.

Man, doubtless, will have acquired much of his knowledge of the nutritive and medicinal value of plants by the same method as the lower animals, by experience. Like them, too, he will have profited by imitation, and imitation embracing his observation of the habits of the lower animals. It must have been of immense importance to man, when he depended largely for food on wild animals captured in the chase, to watch them closely so as to know their habits. Baited trap-holes, being one of the chief modes of capturing game, a knowledge of the favourite foods of animals must have been a first condition of success. This, together with his passion for their domestication, to be at once his companions and his servants, must have given him an intimate knowledge of their foods and their effects. Further, there is not wanting evidence that he did use animals and even his fellow⁵⁴ men as subjects of research in this field, for the Philippine pygmies, if they fancied a fruit were poisonous, would soak it for two or three days, and then give it to one of their dogs; if he seemed none the worse, they would eat it themselves. The American Indians first tested arrow poisons on the old women of the tribe.

That a good deal of man's medicinal knowledge arose accidentally in his efforts to extend the range of his food-supply is suggested by the prominent place occupied by food-stuffs in primitive pharmacy. Honey, milk, butter, and cheese appear and reappear in every conceivable combination. We shall be less likely to underrate the importance of honey in the dietary of primitive man if we bear in mind that it was his only readily available supply of sugar. Honey and the honey-bee were surrounded with a sacred halo of mystery in the mind of the primitive zoologist. He believed the bees to be generated from putrid flesh, just as fish and frogs seemed to be generated from the mud, when the rain filled the pools with water. This was not an unnatural

⁴⁴ Watkins: Gleanings from the Natural History of the Ancients.

⁴⁵ Nat. Anim., V., 46.

⁴⁶ N. H., VIII., 41.

⁴⁷ H. A., IX., 6, and Nat. An., VI., 4.

⁴⁸ Purg. Simplic., 35.

⁴⁹ Pliny: N. H., XIII., 47.

⁵⁰ N. H., XXV., 92.

⁵¹ Habit and Instinct.

⁵² Buchner: Mind in Animals.

⁵³ Mind and Body, 1859 p. 300.

⁵⁴ Zuniga: Franciscan Chronicle, 1738; and Scott-Elliott: Prehistoric Man and his Story.

belief, for he saw the maggot-like larvæ in the honey-comb, and they seemed to him for all the world the same as the maggots engendered in fly-blown putrid meat. Pure honey, engendered in the air, might be found in its elemental purity at dawn deposited on the leaves of trees and elsewhere; how else can we account for the deposit on the leaves of the lime? Pliny⁵⁹ speculates as to whether this liquid is the sweat of the heavens, or saliva emanating from the stars, or an exudation from the air, purified in the process of distillation. Ah! if only it came to us limpid and untainted, as when it set forth on its downward path, before it is corrupted by exhalations from the earth or by the admixture of the juices of flowers and by elaboration in the stomach of the bee! Pliny⁶⁰ describes various kinds of honey with the gusto of an up-to-date apiarist, but he awards the palm to summer honey, for "Nature has revealed in this substance properties most valuable to mortals for, after the rising of each constellation, and more particularly those of the highest rank, or after the appearance of a rainbow, if a shower does not ensue, so that the honey-dew becomes warmed by the rays of the sun, there is produced a medicament, and not real honey, a gift sent from heaven for the cure of diseases of the eye, ulcers, and maladies of the internal organs. If this be taken at the rising of Sirius, and this should happen to fall on the same day as the rising of Venus, Jupiter, or Mercury, as is often the case, the sweetness of this substance and the power it possesses of restoring men to life are not inferior to those attributed to the nectar of the gods." Long before the time of Pliny men were aware of the occasional poisonous properties of honey, and rightly attributed them to the flowers from which the honey was gathered. Xenophon records the toxic effect of the honey at Trebizond on some of the Ten Thousand, which has usually been referred to the *Azalea Pontica* and *Rhododendron Ponticum*, which abound in that neighbourhood; poisonous honey is met also in Pennsylvania, gathered from *Kalmia latifolia*. All the stories of Mithridates having been the discoverer of antidotes seem to be referable to the knowledge that many poisonous plants grew in his kingdom on the shores of the Euxine; as ducks were seen to feed on the herbage with impunity, it was not unnatural that their blood should be regarded as an antidote to poisons.

Mixtures of honey with milk or butter are favourite dishes of the Arabs and Hindoos, and recall the Biblical injunction, "Butter and honey shall he eat." Honey is much used in India in ointments in place of animal fats, which putrefy readily in hot climates. In this country it has been used as a vehicle for drugs, as in mel boracis, or as a palatable addition with mildly laxative effect in confectio piperis. For centuries it has been used as a local application to the aphthæ of children, and Soranus attributes this not to its inherent medicinal qualities, but to the fact that it was taken from hives near the tomb of Hippocrates.

Milk was much used as a vehicle for drugs and butter as an ointment or the base of an ointment, while Zoroaster seems to have anticipated Metchnikoff by living 30 years in the wilderness upon cheese prepared in such a way as to render him insensible to the advances of old age.

Some substances probably found their way into medicine for no better reason than that they were generally ready to hand. Anyone who has lived among the sons of the soil or among fishermen on remote coasts must be familiar with the tendency to use both internally and externally whatever is first to hand. I have seen a farmer pick up a handful of dust and mix it with dung from the hen-roost and then apply the mixture to a sore on a sheep's back; cobwebs are used to staunch the bleeding of a cut, and so is tobacco; leaves are used in the West Indies as plasters and as dressings; and I am not at all sure that dung pharmacy, for all its later elaboration, may not owe its origin in part to this tendency.

Magic was another prolific parent of medicinal remedies; the Echineis is a good illustration of one introduced in obedience to the dictates of sympathetic magic. This genus of sucking fishes has on its head an adhesive disc by which it attaches itself to sharks, turtles, and other marine animals, and in default of these to ships. Its object seems to be to ensure an ample supply of food by increasing its range of locomotion. Its retarding effect on the bodies to

which it attaches itself seemed to suggest the desirability of its use for the same purpose in medicine. We learn from Pliny⁶¹ that it was used in love philtres, apparently to prevent the affections from wandering, and in obstetric medicine to check bleeding from the womb, to prevent procidentia uteri, and to delay premature birth.

POISONS AND THEIR ANTIDOTES.

In the matter of poisons and their antidotes, it was believed that man had learnt many valuable lessons from animals. The poisonous bite of the serpent and the source of its poison were bound to excite speculation. Elian⁶² lays it down that animals acquire poison by feeding on poisonous things; thus the sting of wasp, he says, is far more dangerous if it has tasted a viper, and a fly, if it has touched anything of the kind, has a more harmful bite and causes greater pain. Homer⁶³ depicts the dragon lying before its lair eating baleful herbs, and Vergil⁶⁴ paints the same picture of the snake. Numerous antidotes to the snake's poison were in use. Pliny⁶⁵ says that the plant chondrion, the identity of which is obscure, was employed with good effect, as field-mice were known to eat the plant when bitten by snakes. The same writer⁶⁶ asserts that the tortoise eats the plant known as *cunila bubula* so as to recruit its powers of effectually resisting serpents, and he recommends the juice of the plant in wine to be taken internally, and the bruised leaves to be applied locally for their bite. Aristotle⁶⁷ says that the tortoise, when it has eaten a snake, feeds on marjoram, and he declares that one was seen to do so repeatedly during its repast; seeing this the observer rooted up the marjoram with fatal results to the tortoise. Some of the larger tortoises and turtles do prey on small reptiles, and this must have seemed to call for explanation to those who were familiar for the most part with the herbivorous diet of the smaller land species. The tales of the weasel and the ichneumon in this connexion seem to be all referable to the mongoose. Lyddeker identifies the ichneumon with the Egyptian mongoose, and the similar appearance of the weasel not unnaturally led to confusion. Both Pliny and Elian⁶⁸ say that the weasel protects itself against the serpent by eating rue, but recent experiments tend to show that the weasel will not attack serpents. Wilkinson, in his "Ancient Egyptians," says that an Arab assured him that the ichneumon is very dexterous in killing serpents, and that, whenever bitten, it has recourse to a plant, of which it eats part and applies part to its wound, and then returns revived to the encounter. According to Lindsay,⁶⁹ the Indian mongoose, when poisoned by a snake-bite, uses *Mimosa octandra* as an antidote; the mongoose plant, *Ophiorhiza mungos*, is used for the same purpose in India. Most countries have their particular antidotal snake-root; in North America and Canada the roots of *Liatris spicata*, *Eryngium aquaticum*, *Eupatorium altissimum*, and *Asarum Canadense* are all in favour; and elsewhere *Aristolochia serpentaria*, *Polygala Senega*, and *Cimicifuga racemosa* have all been used for the same purpose. Most of these contain active principles, which in warm decoctions induce diaphoresis or diuresis, the idea being that the poison will be eliminated by the skin or kidneys.

Spider's venom was regarded with only less fear than that of the serpent. The tale was told that the toad, when bitten by a spider, ate the leaves of the greater plantain, and succumbed to the bite when these were not available. Deer were said to protect themselves from the poison by eating crabs.⁷⁰ The victims of that epidemic form of convulsive hysteria known as tarantism, which flourished over wide areas more particularly in Italy, believed themselves to have been bitten by the tarantula spider. So ingrained was this belief that Constantine the African, the most learned physician of Salerno, stated that those who were bitten were liable to eject from their stomach and bowels substances resembling a spider's web. It was nevertheless not an animal venom, but a mental poison that was propagated from person to person in a human soil sensitised by long years of pestilence and warfare. The efforts of the victims to cure themselves by wild dancing, excited and maintained by the music of the flute, may be regarded as rational therapeutics according to

⁵⁹ N. H., IX., 41.

⁶² Nat. Anim., IX.,

⁶³ Illad., XXII., 93. ⁶⁴ Æneid., II., 471. ⁶⁵ N. H., XXII., 45.

⁶⁶ Ib., VIII., 41, and XX., 61. ⁶⁷ H. A., IX., 6.

⁶⁸ N. H., VIII., 41, and Nat. Anim., IV., 4.

⁶⁹ W. Lauder Lindsay: Mind in the Lower Animals, II., 384.

⁷⁰ Aristotle: H. A., IX., 5; and Pliny: N. H., VIII., 41.

⁵⁰ N. H., XI., 12.

⁶⁰ Ib., XI., 14.

the notion of the day, for clearly the chemical poison should find an exit in the sweating provoked by the violent exertion of the dance. Just so, when disease is conceived as due to a demoniac mannikin within the sufferer, savages resort to violent bodily movements to effect its expulsion.

These various legends of the effect of spider's venom on animals and man rest on the most slender basis of fact. It is true that all spiders have poison-glands which communicate with fangs in the mandibles, but the smaller species are quite harmless to man and the larger animals, and it is open to question whether their poison plays an important part in the killing of insects. With regard to the tarantula there is little evidence to show that its bite can cause more than local irritation in man and other large animals; this, of course, in rare and unfavourable circumstances, may be the starting point of a secondary generalised poisoning. Some of the larger spiders can undoubtedly kill small birds and animals, but Warburton⁷¹ holds that this is due to the unerring accuracy with which they drive their jaws into the vital nervous parts of their victims. Fabre, on the contrary, insists that death does not depend on the bite involving a vital part. There were some apparently, even in the seventeenth century, who did not believe in the poisonous effect of the tarantula's bite, for Ferdinando, a physician of Messapia, considered the symptoms to be those of a melancholy dependent on the imagination.

EVIDENCE OF HEALING PRACTICES AMONG ANIMALS.

We may now pass from the domain of legend to the more prosaic consideration of such substantial evidence as there is of the existence of healing practices among animals, and we shall find it disappointingly slight.

Livingstone left it on record that some of the anthropoid apes staunch bleeding by pressure with their hand on the wound or by stuffing it with leaves, turf, or grass. Dr. Thomas Savage has recorded the same practice of the chimpanzee. Moore⁷² extends the range of action to the young in the case of a female monkey which tore leaves from the trees as it fled with its wounded baby in its arms and stuffed them into the bullet wound to staunch the bleeding. Darwin⁷³ notes that the long-armed apes sometimes use their arms as crutches, swinging their bodies forward between them. The smaller monkeys exhibit considerable skill in the extraction of thorns. They search themselves for parasites and assist their comrades by searching the head and such other parts as each is unable to reach for itself. When a flea is caught they examine it critically and then swallow it. Darwin mentions an idiot who, in searching for lice, supplemented the use of his hands with his mouth. Frobenius⁷⁴ describes a family party of natives in North Congo seated round a fire searching each other for pediculi; when one was found the captor grimaced cheerfully and hurriedly conveyed it to his mouth. Moore tells of an orang-outang that was once bled for some illness which, whenever afterwards it was ill, would point to the vein in its arm, as though he wished the operation to be repeated; there is a reliable record of a monkey which similarly appealed for administration of a clyster. These records serve at least to show how readily monkeys learn to appreciate a remedy by which they have benefited. As we descend in the scale of creation, we cease to find any sure indications of the existence of a therapeutic sense; it is more than doubtful if we can refer the licking of wounds or the eating of grass by dogs to this category.

Cats exhibit a keen sense of maternity, and a mother-cat will sometimes attend fondly on its daughter during the birth of its kittens. Cabanés says that they have been known to bite the cord and carry off the kittens to their own nest and there lick them clean. I myself can testify to what appeared to be an exhibition of the keenest sympathy of one female cat to another in these circumstances, anxiously brooding over and licking the expectant mother; but it may well be that this was no more than the prompting of a confused maternal instinct.

Cabanés⁷⁵ has some wonderful tales of avian surgery, so wonderful that, for all his sincerity, they would seem to call for further investigation before acceptance. He cites M. Fatio as authority for the statement that woodcock, corn-crakes, and snipe have been known to pluck their feathers

and make most elaborate dressings for wounds and for fractured legs. In another instance he alleges that a black-bird with a broken leg, failing in its own efforts to dress the fracture, summoned its companions with a cry and then ligatured it admirably. It is not difficult to see how a wounded and bleeding leg may acquire an adhesive dressing of feathers without postulating the purposive use of the bird's beak in providing it, and still less a summons to other birds to assist at the operation. Anyone familiar with wounded game knows how frequently a matted tangle of blood and feathers is found adhering to a wound. In another case Cabanés mentions a quail found in Savoy with its left leg broken above the ankle. It was wearing a dressing composed of blades of grass rolled circularly round the site of fracture and bound to one another; the whole formed a lump the size of a hazel-nut, and in spite of the riding of the ends of the bones good union had been obtained. Here, again, it seems easier to imagine an accidental winding of grass-blades round the broken ankle in the bird's frantic efforts to liberate the hanging foot caught in the grass.

That auscultatory percussion is practised by birds and other animals is beyond question, yet it can hardly be argued that man adopted the practice from them. Woodpeckers, nuthatches, and tree-creepers tap the bark of trees to see if it emits a hollow sound; if hollow, they continue to tap till any insects emerge; in the same way the aye-aye lemur taps the bark in search of caterpillars, and employs its finger as a probe to search for them.

From all this there seems to emerge a strong presumption that below the level of the monkey tribe a healing sense is not existent, and only among the anthropoids is there unmistakable evidence of even a lowly stage of its development. In what I have said I have intentionally limited my remarks to curative medicine, but there remains a further fascinating chapter of animal anticipations of sanitary science, with which we will deal on a future occasion.

WARFARE ON THE BRAIN.¹

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"WARFARE on the Brain," a title which allows me a wide choice of subjects for discussion, was selected not on account of a wish to discuss many subjects, but because it embraces both the psychical and physical injuries inflicted by warfare upon the highest part of the nervous system. There can be no medical man in this country at the present time who is not being constantly brought in contact with these psychical and physical injuries and who does not appreciate the difficulties which surround their proper interpretation and their proper treatment.

This paper represents an attempt, made for my own instruction as much as anything else, to crystallise some of the ideas I have formed with regard to the solution of these difficulties, and especially in relation to their practical aspect. Pretending to no profound knowledge of psychology, I shall not attempt to discuss abstruse psychological problems or theories, and I shall hope to be forgiven if my inability to understand the precise meaning of some psychological terms and expressions leads me to their misuse. For the most part my remarks will deal with the principles of diagnosis and treatment which, as the result of experience, I have come to regard as important, and my subject will be divided into two parts under the subtitles of (1) Shell Shock and (2) Traumatic Epilepsy.

Shell Shock.

This unfortunate and much-abused term has been allowed to cover a multitude of sins, to shelter a mass of ignorance, and to inspire the public with the belief that a new disease has been added to our already long list, the responsibility for which lies with the originators of Armageddon. No attempt to treat these cases affords any hope of success until it is realised that the name on their labels covers a number of different conditions and until some effort is made to identify

¹ A paper read before the Harveian Society of London on Nov. 2nd, 1916.

⁷¹ Cambridge Manuals, "Spiders."
⁷² Universal Kinship. ⁷³ Descent of Man, Pt. I., ch. vi.
⁷⁴ Childhood of Man.
⁷⁵ Bulletin Général de Thérapeutique, 1912.

and classify the varieties. The process of identification and classification of any particular case is a comparatively simple matter if anything like an accurate account of the patient's experience and past history is obtainable. The difficulty arises when these are not forthcoming, and a diagnosis has perforce to be postponed until sufficient time has elapsed for observation or until data can be collected from other sources. It must be remembered that the patient's own account may be entirely misleading, even more so than it often is in ordinary cases of illness or of injury. In particular it is frequently impossible to decide on the evidence given by the patient whether he has received a psychical or physical injury or both, to whether he has passed through a period of unconsciousness or only one of amnesia. Let me make at once a crude effort to enumerate and describe briefly the various conditions which are frequently met with and labeled as shell shock.

First of all, there are what we may call the pure exhaustion cases. These are men who, starting with an average allowance of resisting power, after a more or less prolonged exposure to the strain of warfare, become restless, irritable, depressed, sleepless, and lacking in attention and concentration. If this condition is recognised in an early stage by the medical officer and rest ordered a comparatively short period will suffice for the patient to regain his normal health. More often the patient refuses to acknowledge his condition until some crisis occurs in the shape of a severe bombardment, an attack of illness, some extra responsibility, or perhaps some personal anxiety or disagreeable incident. Then he is sent home in a more or less advanced condition of "neurasthenia," and something like six months' respite from active service becomes necessary. Naturally each individual has his own allowance of resisting power, and consequently the periods of strain which each can endure vary very considerably. On the other hand, there may be complicating factors which modify the case, of which one of the most remarkable is alcohol. There is no doubt that those men who look to alcohol for support and recuperation fail earlier than those who realise the treacherous nature of its assistance. The same applies to the less frequent abuse of drugs for similar ends.

The proper treatment of exhaustion cases is obviously rest in bed in quiet surroundings. Nevertheless, the patient is generally very reluctant to recognise this, and his feeling of restlessness, often accompanied by a desire for distraction which he regards as the best antidote for his depression, leads him to the opposite extreme, with the result that, unless he is taken properly in hand, he goes from bad to worse and after a month or two at home is much more exhausted than on his return from the front. I regret to say that some of these patients are badly advised in that they are allowed up too soon and sent to their homes with a recommendation to take at once plenty of exercise in the fresh air. Such a remedy for exhaustion is not unnaturally responsible for the prolongation of symptoms, and I come across not a few patients who have wasted a lot of valuable time in pursuing this method of regaining health. Over and over again have I encountered dismay and even indignation on the part of the patient for whom I have advised rest in bed as the only remedy for his complaint, and many a time have I been thanked later for my insistence on the advice being carried out.

The common fallacy that lack of sleep at night in an exhausted patient must be met by letting the patient tire himself during the day has to be exposed and explained, and the fact that a sleepless patient suffers little real harm if he is resting in bed often needs emphasising. The prognosis in this class of case is very favourable under proper conditions of treatment, but the period of rest required varies with constitutional idiosyncrasies and with the degree of exhaustion presented when the patient is first seen.

Next to the pure exhaustion cases should be considered those patients who have inherited neuropathic or psychopathic tendencies and in whom the process of exhaustion has excited these dormant tendencies into activity. These form a large group, a fact which should occasion no surprise when it is remembered that the Army is recruited in this war from the population as a whole without any attention being paid to the hereditary or constitutional fitness of the recruit to stand strain or fatigue. In this group we may place many patients who exhibit either for the first time or in the form of a relapse such phenomena as tics, articulatory defects,

epilepsy, or phobias on the one hand or more serious forms of insanity on the other. The tics and stammers are frequently found in patients who have been subject to similar troubles earlier in life and can generally be cured, after a suitable period of rest, by the re-educative methods usually employed. Other phenomena require their appropriate treatment, but very few of the patients belonging to this category should be sent back to active service; many are best dealt with by return to civil life and some are suitable for the less strenuous military duties of home service.

Reference may next be made to a comparatively small class of what we may call "martial misfits." These are men who are compelled to join the Army by public opinion, who may pass as normal individuals in ordinary life, who are quite aware that they cannot stand the strain of warfare, and who are often quite frank in confessing all these facts to the medical man who attends them on their return from the front. Some of them will tell you that they have entertained quite a keen curiosity as to the length of time they could remain in the fighting line, and at least one has told me that this question was a matter of chaff and even of a bet between him and his companions in the days of their training. Their stay at the front is, as a rule, too short to produce very severe or lasting symptoms, but they are quite convinced, and rightly so, that any attempt to return would only lead to a similar result. They are glad to have "done their bit" and they would like to continue in khaki until the end of the war, but I have no doubt in my own mind that they would really be serving their country better as civilians.

So far I have confined my attention to the case of soldiers who have not suffered the direct effects of shell explosion or in the case of whom such a shell shock, of more or less severity, has only been one factor, perhaps the culminating factor, in bringing them under medical care. We must recognise in addition the normal healthy individual who suffers from concussion as the immediate result of a too close intimacy with a shell explosion and who reacts in the same way as do most patients to a severe blow on the head. The period of unconsciousness is followed by a more prolonged period, during which the patient evinces symptoms similar to those of exhaustion. He is easily tired, irritable, over-reactive to auditory and visual stimulation, lacking in confidence and concentration, and often depressed. He suffers from headache, insomnia, or fighting dreams, and in brief resembles the exhausted patients I have referred to already. This resemblance is not confined to his symptoms, but extends to his treatment, and I do not think that one can emphasise too strongly the importance of prolonged rest in bed in all cases of severe concussion attended by loss of consciousness, even in the absence of any evidence of a fractured skull or of neurological signs. As a physician, I am convinced that I should see considerably fewer patients suffering from the after-effects of head injuries if other practitioners, and even surgeons, were at one with me on this point. In my military wards and in my practice I make a general rule that all cases of severe head injury, however quickly they appear to lose their symptoms, spend at least four weeks in bed.

Here I should like to say a few words about diagnosis. In these days, when so many cases suffering from shell shock without apparent physical injury pass under observation, it is very easy to overlook the exceptional patient who has sustained some definite local damage to his brain. Let me give you an instance. In August, 1915, an officer was blown by a shell a distance of many yards and lay unconscious for a few minutes. He found himself unbruised, regarded himself as merely shaken, and carried on with difficulty for 24 hours. Finding his legs unreliable he then went sick, and was sent home as a case of shell shock. He remained a case of shell shock until February, 1916, when I first saw him. He could then walk five or six miles without much difficulty provided the ground was smooth. He complained, however, that rough ground was too much for him, that in going downstairs he always took the step with his left foot rather than his right, and that the latter had a way of turning in unless he looked after it. I could find no loss of power, no alteration in the reflexes, and no disturbance of superficial sensibility. Further examination, however, showed that his sense of position and movement in regard to his right foot was faulty, that he could not balance himself on that foot, and that he could not appreciate the vibration of a tuning-fork on that foot as well as he could on the other.

Superficial investigation of his head revealed nothing, but an X ray examination showed a slight fracture, without decomposition, in the left post-Rolandic region near the middle line of the skull. On further inquiry it appeared that his helmet was bashed in over a corresponding area. This was clearly a case of severe bruising of the brain over a well-defined spot, severe enough to produce symptoms still recognisable six and, as events turned out, at least eight months later. This case serves to emphasise a fact which it is very useful to remember—namely, that superficial injury of the sensory cortex does not give rise to ordinary anaesthesia or analgesia, but to disturbance of deep sensibility such as can only be detected by testing the sense of posture and movement, the sense of vibration, and so on.

¶ Much of professional and public interest in shell shock has been centred on another group of cases which attract attention on account of their more theatrical attributes. I refer to the patients who suffer from so-called functional paralysis, anaesthesia, mutism, aphonia, deafness, blindness, &c. If it were not for a certain amount of obloquy attaching to the word I should not hesitate to class them all together under the name of hysteria. I fail to find any essential difference between such cases arising out of the psychical and physical injuries of warfare and those with which we are familiar in civil life, and especially in that part of our civil work which has to do with insurance and medico-legal problems. In both groups we are constantly confronted with the same questions. Is the patient consciously assuming some disability or is the latter completely outside his ken and his control? In other words, is he malingering or is he not? It is generally assumed by writers on this subject that the answer must be Yes or No, and it is only rarely allowed or even hinted at that the truth may be found somewhere between the positive and negative reply. My conception of a malingerer is a person who with a perfectly clear and well-balanced mind confesses to himself quite frankly that for some definite purpose he will assume a certain disability. My belief in the general honesty of the human mind leads me to the conclusion that such persons are extremely rare. But I am obliged, especially by lawyers, to state that a patient is either malingering or is suffering from a functional disorder, and by the latter term I am supposed to indicate that the origin of his disability is entirely outside consciousness and totally independent of volition. I do not pretend to understand all the subtleties of consciousness or all the workings of volition, but I cannot acknowledge any satisfaction in overcoming these difficulties by an appeal to a subconscious mind or to a process called involuntary inhibition. There are several questions which I should like to refer to as having some bearing on this difficult problem.

In the first place, is it not a mistake to suppose that the majority of patients exercise any clear reasoning in what they do or what they say? Are not most of their acts and words the result of vague and instinctive ideas hovering in and around their realm of consciousness? Education, especially a scientific education, serves to diminish the extent to which we are influenced by such ideas; but are not the most educated constantly led astray? It seems to me almost an act of cowardice to plead that this or that act or word, to which we have committed ourselves and which cannot be defended by reason, must be laid to the account of our subconscious mind.

I am told that a "fixed idea of paralysis" as an explanation of a functional palsy belongs to an effete psychology, and I quite agree that any attempt to fix such an idea on any particular part of the cortex is not to be tolerated. But the more I see of these cases the more convinced am I that an idea—a conscious idea—plays some, it may be in a totally confused and illogical manner, yet all the same plays some, part in the production of all these hysterical phenomena.

Colonel C. S. Myers, R.A.M.C. (T.C.), in the course of an extremely interesting paper² on functional disorders of speech and allied subjects, comes to the conclusion that two kinds of inhibition are discernible, the one due to a blocking of the paths that subserve the mechanism of articulation or phonation, the block producing the quasi-paralysis of functional mutism or aphonia; the other due to a blocking of the paths that control and coördinate their mechanism, the

block producing the quasi-spastic or clonic or ataxic conditions of functional dysarthria. Other writers have made similar attempts to localise the seat of trouble, and one has heard vague references to bilateral lesions of the third frontal convolution as an alternative. Much as I admire the work of these authors in most respects, I find myself entirely opposed to any such attempts to localise anatomically what appear to me to be essentially disorders of the mind in the present state of our knowledge or rather in the present state of our ignorance. How can we possibly explain the incidence of these disorders on any anatomical basis? We all knew the expressions "struck dumb," "struck blind," "struck helpless," "deafened" before the war, but we never heard of anyone being "struck tasteless," "struck dysphagic," or "struck incapable of mastication." How is it, then, that the deaf, the dumb, the blind, and the paralysed are numerous, and that soldiers who cannot taste, swallow, or masticate are practically nonexistent, unless some idea—some conscious idea—plays some, however small, part in their incidence?

Again, what can be the significance of the almost universal rule that soldiers suffering from really serious injuries do not display any of these so-called functional or hysterical disorders? Are we to believe that an entirely unconscious psychical process can explain such a striking feature of warfare? For nearly 18 months I have had charge of a ward devoted almost exclusively to severe injuries of the brain, spine, cord, and peripheral nerves, and I cannot remember a single instance in which the neurological symptoms have been complicated by functional disorders of the kind I am now discussing.

Colonel Myers, who has seen large numbers of mute soldiers, calls attention to the rarity of mutism resulting from shell shock amongst officers, and I believe he says that no instance of the kind has actually come under his observation. As it happens, I have seen one mute officer who had been subjected to a severe shell explosion and who came under my care as soon as he entered a London hospital. Let me give you the story of his case in a few words. I saw him on the afternoon of the day he arrived and found him completely dumb, but ready to afford me all information by means of writing. After a short examination, during which I did not display a great deal of interest or surprise in regard to his inability to talk, I gave the nurse in charge, in the presence of the patient, my instructions that no visitors should be allowed until his speech had returned. The patient, who had a young wife and a baby he had not yet seen, was talking quite freely the next day, a cure which he attributed to knocking his head against the rail of his bed in the morning. I cannot help wondering whether my instructions to the nurse or the alleged blow on the head exerted the more active influence in removing the block on the paths that subserve the mechanism of articulation or phonation. It may be asserted by some that this was clearly a case of malingering, but I should not support that view if the definition of malingerer resembles at all that which I have already suggested.

It appears to me that the fact that so few officers suffer from mutism as compared to the rank and file may possibly be explained by their superior education and knowledge. When we remember what an extraordinary state of mental confusion and jumble is produced in so many of our patients by a simple cross-examination of the history and the nature of their ailments or of their injuries, how hopelessly they mix cause, time, and effect, and how thoroughly satisfied they are with their own perfectly impossible reasons for this and that symptom, I do not find it difficult to believe that the psychical and physical injuries of warfare may so disturb the conscious mind as to lead to the production of these hysterical phenomena. I quite agree with Colonel Myers when he says that in practice "every grade of transition may be met with between quite uncontrollable functional disorder and sheer purposeful malingering," and I would go further and say that in every case a conscious idea more or less confused and more or less self-confessed is an important element in each instance.

With regard to the sudden recoveries of speech in mute patients, I hold the view that, in many cases at any rate, the exciting causes to which they attribute their almost miraculous cures are incidents which they choose and sometimes invent for the purpose, and that probably they have previously discovered not only the fact that speech

² THE LANCET, Sept. 9th, 1916.

is possible, but have also realised an urgent desire to recommence normal communion with their fellows.

Probably Colonel Myers is correct in describing a state of stupor immediately following a severe shell shock in which the mind is so dazed and absorbed by terror, or by the vivid impression of incidents recently experienced, that communion with the outside world is really impossible, and it is probably during the recovery from the stuporose condition that those conscious ideas which form the basis, or are, at any rate, an important factor in the prolongation of mutism, come into being.

With regard to the treatment of all these hysterical phenomena my experience leads me to believe that any form of suggestion, whether applied under normal conditions or under the influence of anaesthetics or hypnosis, may be successful, but that success depends first of all on the willingness of the patient to recover, and secondly on the adequacy of the suggestive stimulation. There is, perhaps, one other precaution which should be taken by any medical man who has to treat these cases, and that is, while displaying a sympathetic understanding of the patient's story and complaints, not to express surprise or too obvious a spirit of scientific interest; more important still, to refrain from discussing or demonstrating the patient's disabilities before others. In the case of a mute it is not good for the patient to hear that he can't talk; it is not fair to him to say that he won't talk; in the present state of our knowledge it is best for everybody, and for science, to be content with the simple statement that he *doesn't* talk.

I should not have spent so much time and so many words on this part of my subject if I did not feel strongly how important it is for every one of us to make a clear distinction between what are called neurological lesions and mental disorders, between lesions which can be localised anatomically and disorders which belong to the realm of ideas, and which we in our ignorance can only conceive as having their origin somewhere in the highest centres of the nervous system. Hysteria is a mental disorder, and, however localised its physical manifestations, everything points to the mind as its source. There is much confusion on this point, even amongst medical men, and perhaps this confusion is no more strikingly illustrated than in the matter of "spinal concussion." This term has been used in two senses. It is used to describe a functional paraplegia resulting from an injury, but if it is so used it should never be forgotten for a moment that the disorder responsible for the paraplegia is a mental disorder and not a disturbance of function at any level of the spinal cord. On the other hand, true cases of concussion of the spinal cord can always be recognised by careful investigation, and any foci of hæmorrhage or softening which result from concussion more or less exactly localised.

Let me draw this distinction as graphically as possible by means of two cases. In the early days of the war a lad of about 19 was blown up by a shell and sent home apparently completely paralysed from the waist downwards. When he came into my ward he had already spent ten months in other hospitals, always nursed with the greatest care, lying on a water bed, with his penis in a urinal, smoking innumerable cigarettes, and eating countless chocolates. He was accepted into my ward as a hopeless paraplegic, and I found him lying as I have described. He did not move his legs when invited to do so, and these limbs were much wasted and quite flaccid. The knee-jerks were elicited with difficulty, but the plantar responses were flexor in type. In spite of the fact that there was complete anaesthesia to all forms of stimulation from the umbilicus downwards, the abdominal reflexes were preserved and there was no shifting upwards of the navel when he made the attempt to sit up. On further inquiry I found that there was no real incontinence and that he passed his urine at intervals into the vessel placed for its reception. This was a case which might be called one of spinal concussion, but is better described as one of hysterical paraplegia. I directed my treatment not to his spinal cord, but to his mind. Isolation, the stoppage of tobacco and all visitors, the assurance that he would rapidly get well, together with some suggestive faradisation of his legs, brought about a cure in a very short period, although some time elapsed before his atrophied legs were strong enough to give him any great degree of activity.

By way of contrast, let me relate the history of another patient whom I saw a day or two ago. A young officer was

hit in the back by a piece of shrapnel and fell paralysed in all four limbs. After a few minutes he had recovered sufficiently to get up and he walked more than a mile to his dressing station. When he reached a London hospital he complained of nothing except his wound, which was already well on the road to healing, the foreign body having been removed in France from the muscles of the back near to the left side of the upper dorsal spine. He remained in hospital long enough for this wound to heal and then went to a convalescent home. On his return I saw him because he complained that when taking a bath he could not feel the temperature of the water with his right leg. On examination his power was found to be perfect and all his reflexes normal, but testing his sensibility I found complete loss to heat, cold, and pain on the right side of the body and the right leg from the level of the seventh costal cartilage downwards. That was his only defect, and could easily be explained by a minute focus of hæmorrhage or softening in the upper part of the dorsal cord on the left side. This was an example of the effects of true spinal concussion manifested by a slight but perfectly recognisable and localisable lesion. The importance of discriminating between these two types of spinal concussion is as important in civil as in military work, and especially in dealing with legal claims made in relation to accidental injuries.

Traumatic Epilepsy.

You will, I hope, excuse me if I now leave the subject of shell shock and turn somewhat abruptly to that of traumatic epilepsy as another common result of warfare on the brain. This step is taken because the question of how we are going to deal with a large number of cases of epilepsy arising out of injuries sustained in this war is already, and is going to be still more, one of very great importance to all of us. It is a common experience in my practice to have cases suffering from traumatic epilepsy referred to me for advice as to treatment, and not infrequently it is assumed that the treatment must be surgical. It is not my intention to suggest that surgery has no part in the treatment of traumatic epilepsy, but our time will not, I think, be wasted if we consider carefully what are the principles which ought to guide us in the medical and surgical treatment of these patients. One of the most difficult subjects in medical science is the pathogenesis of epilepsy; but before dealing with remedial measures it will be well to recall what we know about the incidence of the disease in relation to head injuries, and to inquire how far this knowledge helps us in understanding the pathology and treatment of the condition.

In the first place, one is struck by the fact that only a certain proportion of persons suffering from head injuries develop fits.

In the second place, we are faced with the discovery that the locality of the injury has no apparent influence in the production, although, of course, it may modify the features, of the epileptic attack.

Thirdly, and this is a matter which we must never forget, the severity of the injury has, as far as we can judge, no bearing on the question as to whether epilepsy is or is not likely to supervene. We have all seen, or will see, instances of this disorder following trivial blows on the head in connexion with which no injury to bone, membrane, or brain can be demonstrated. We find it following simple or depressed fractures of the skull, and we find it perhaps equally frequent as a sequel to severe lesions involving the membranes and the brain itself. But we must not forget that there are numerous patients, all of whom have been subject to one or other of these grades of trauma, who go on living without developing any epileptic tendencies. The only conclusion which I have been able to draw from these facts is that we are all potentially epileptic, and that we only differ one from another in the ease or difficulty with which this latent process can be excited into activity. One of the results which may be arrived at from the experiences of this war may be looked for in the shape of some statistics showing how far neuropathic or psychopathic tendencies of hereditary origin predispose a soldier to epilepsy after receiving a head injury. At the present time I am ignorant of any reliable data on which to form an opinion in regard to this question. As far as my own experience is concerned, it is impossible to prophesy whether this or that patient suffering from a head injury is likely to develop fits, and it is my practice, as I shall show presently, to assume that this

is a possibility which we cannot put out of court in any particular instance.

What is the right course to pursue in the case of any patient suffering from traumatic epilepsy brought for advice as to treatment? We shall all agree that, in the first place, it is desirable to investigate the condition of the patient's head resulting from the trauma he has sustained, and we shall employ not only our clinical methods of investigation, but the help of X rays in order to attain this result. In one case we shall find no evidence of injury, although there may be a history of a blow, and we shall be confronted with the question as to whether we are to remain satisfied with the evidence of an X ray examination as to the absence of any depressed fracture. We may feel that a depressed fracture is a condition which should be dealt with surgically and that it is impossible to be sure of its presence or absence without an exploratory operation. This may be a justifiable proceeding in any case where the site of the injury is clearly determined.

In another case we find that an operation soon after the infliction of the wound has been performed for the purpose either of exploration for foreign bodies or for sepsis and drainage, that the scar has healed and is healthy, and that there is no evidence of increased intracranial pressure. X ray examination reveals the presence of no foreign body and of no fragments of bone, either deep or superficial, and we conclude that a scar is formed in which perhaps the surface of the brain, the dura mater, and the scalp are all more or less involved. I hold that in such a case no operation is justifiable, that any attempt at surgical interference of any exploratory character can only lead eventually to further scar tissue, and more likely than not to further injury of the brain.

In a third case our examination shows a similar healthy condition of the scar, but the presence of a superficial foreign body or superficial fragments of bone embedded in the damaged surface of the brain or in the tissue overlying it. In this instance we may take the view that such foreign bodies by their weight and mobility, in relation to the pulsation of the brain, may exercise some irritating influence upon that organ, and we may justify a desire to round up these alien enemies by the conviction that the operation can do no further damage to the brain.

Finally, we are confronted with the problem presented by a case in which, again, the wounded parts are healed, there is an opening in the skull, and the X rays reveal the presence of bone or metal embedded in the brain at some distance from the surface. These are the cases which present the greatest difficulty, because we know that any attempt to remove the offending matter is sure to be accompanied by destruction of important nervous tissue, and we are aware, or ought to be aware, that this removal provides no guarantee whatever that the patient's fits will cease to occur. It is imperative at this stage to remember that fits originate in damaged brain and not in bone or metal. I believe that we should be guided in such a case by other considerations than those which bear upon the question of epilepsy. For instance, some pieces of metal by their size and weight appear to give rise to a form of aseptic encephalitis the symptoms of which resemble those of a cerebral abscess in the shape of headache, vomiting, optic neuritis, and focal signs. It is interesting to note at this point that such symptoms of cerebral irritation may not be developed so long as the patient is leading a quiet, restful existence in hospital, but tend to supervene when he returns home and attempts to carry on anything like a normal existence. If this is the case, I have no hesitation in saying that the piece of metal must be removed if accessible to the surgeon.

Supposing, on the other hand, that the foreign body or bodies are small and not giving rise to such symptoms as I have mentioned, it is, I believe, an unwise procedure to resort to further interference. Time alone will show what is to be the ultimate fate of many men who are returning to civil life with these small and sometimes numerous relics of their warlike days lying in the brain.

So far I have had the presumption to deal with what may be called the surgical aspect of these cases, and I must now state as emphatically as possible that, whether any surgical procedure has been carried out or not, the treatment of the epilepsy has not yet begun. The treatment of the epilepsy is, and can only be, medical and chiefly medicinal. It will depend upon the proper administration of bromides and other drugs and the proper guidance of the patient in the

kind of life which he proposes to pursue. I maintain that the principle guiding surgical procedures in any case is simply this: we must satisfy ourselves that the conditions at the site of injury have been made as healthy and as near the normal as surgery can make them. It is most important that in dealing with any particular patient and before undertaking any operation in connexion with traumatic epilepsy this principle should be explained to the patient and his relatives. They should clearly understand that the operation is not undertaken for the purpose of curing his malady, but for the purpose of making the outlook for the success of his medicinal treatment as hopeful as we, in the present state of our knowledge, can expect.

The conclusions I have outlined are those based not merely on the short experience of this war, but on a long experience of traumatic epilepsy and the results of operation in civil life, and you will not be surprised that my conclusions are what they are when I tell you that I have never seen a case of traumatic epilepsy cured by operation alone.

Anyone who has experience of epilepsy is aware that any drastic treatment may for a time show apparently good results, and that these temporary improvements have often been mistaken for cures. The places to look for cases illustrating the surgical cure of epilepsy are the institutions and colonies provided for the incurable and chronic examples of that disease. On the other hand, there is every reason to believe that if the assistance of surgery is used in the way I have indicated and if the medicinal treatment of the disease is carried out sufficiently early, with perseverance, regularity, and skill, the prospect of nipping these cases of epilepsy in the bud is full of hope. The important thing is to bring the effect of bromide to bear as soon as possible in order to prevent the brain acquiring the "habit of fits."

So firm is my belief in prophylaxis and early treatment that I make a rule of giving bromide to every case of head injury which comes into my ward, and if I had my way I would give every case of the kind some bromide for at least six months after the date of his injury. The determination of time in regard to treatment is always a difficult matter, and any attempt to lay down fixed periods has generally led to disastrous results. It is quite possible that the six months I have mentioned would be better extended to at least a year or even longer.

So much for the treatment of the individual. A much larger question should be occupying the minds of those in authority—the question of how to deal with the large number of epileptics who will be left unemployed and unprovided for at the end of the war.

There is a consensus of opinion that one of the most important elements in the treatment of epilepsy, whether traumatic or idiopathic in character, is regular employment for mind and body. So far this country has not dealt with the epileptic problem in a satisfactory way, and it is to be hoped that the Government will make a big effort to improve the lot of these unfortunate members of society by some development of the colony system under medical control. This is one of the directions in which a Minister of Health could find plenty of scope for his energies.

Wimpole-street, W.

METROPOLITAN HOSPITAL SUNDAY FUND.—At the annual meeting of this Fund, held at the Mansion House on Dec. 21st, under the presidency of the Lord Mayor, it was stated that the annual collection amounted to £70,700, of which sum £35,121 were received from places of worship. Hospital Sunday was fixed for the fourth Sunday in June for the future.

THE TRAINING OF HEALTH VISITORS.—At the present moment there is a great demand for health visitors in connexion with the establishment of infant-welfare centres under the new Local Government Board scheme. Heretofore the facilities for the training of such visitors have lacked the important essential of affording practical experience in the management of babies. The new school of mothercraft which is to be opened in February next at 29-31, Trebovir-road, S.W., by Miss E. Wheatley and Miss W. Wrench, should afford excellent opportunities for teaching this subject in a practical way, for resident babies will serve as the didactic material on which the students can learn. The course is to consist of nine months' training, and experience will be gained in breast-feeding as well as in most of the recognised methods of artificial feeding.

PLANT HAIRS AS PSEUDO-PARASITES.

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AND

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It is perhaps no exaggeration to say that until the present war, routine microscopical examination of the faeces has never been so extensively carried out. In the course of this search it is not uncommon to find bodies which at first sight suggest some form of animal parasite. Closer examination, however, proves as a rule that the supposed parasite is merely some form of plant anatomy, generally of the nature of plant hairs.

FIG. 2.



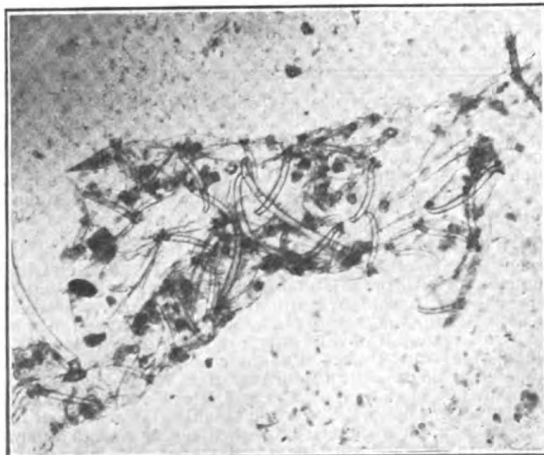
Microphotograph of stinging hair of nettle. $\times 60$. Note bulbous base and bent-over apex.

As the characters of the hairs found on the common edible plants are probably little known to bacteriologists, and as it is difficult to find drawings of them even when botanical

literature is accessible, we considered that a series of illustrations of such hairs might be of some little value as a reference. Further, plant hairs have acquired some degree of importance, inasmuch as they may form the starting point of appendicular concretions, as has recently been emphasised by Professor S. G. Shattock.¹ As plant hairs are composed of cutin they are extremely resistant to the action of the digestive juices, and some of them, notably those of the runner-bean above described, may

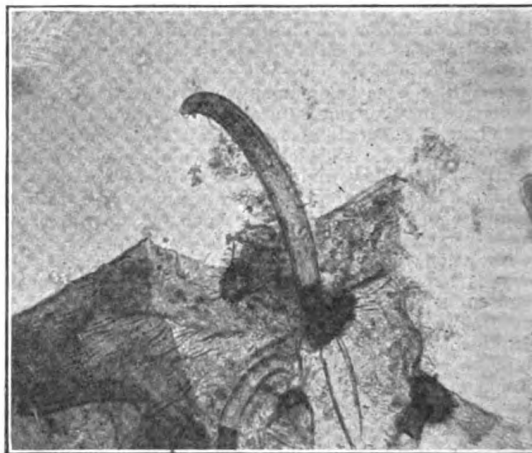
A patient was admitted to hospital on account of diarrhoea which had been unsuccessfully treated outside. He gave a history of having lived until recently on the borders of Chili and Argentina. The clinician who first saw the case considered the possibility of a parasitic cause and treated the case accordingly. An examination of the stools thereafter revealed the presence of large numbers of bodies which at the first glance resembled ankylostoma, and in addition small bladder-like structures. The former had a hooked pointed tip, while the other end, which was somewhat expanded, showed the presence of small spines. The whole appearance suggested the male form of ankylostoma. The size, however, was entirely against its being such, the largest being roughly 300μ . Moreover, no oral aperture and no evidence of any internal organs could ever be detected and no ova could be found. The patient's blood, while showing a slight degree of anemia, gave no evidence of eosinophilia. A consideration of the above facts pointed to the bodies being plant hairs, and after further investigation we identified them as the grapple hairs of the common runner-bean.

FIG. 3.



Microphotograph of portion of membrane from scarlet runner with attached hairs. $\times 60$.

FIG. 1.



Microphotograph of a short grapple hair of the scarlet runner. $\times 260$.

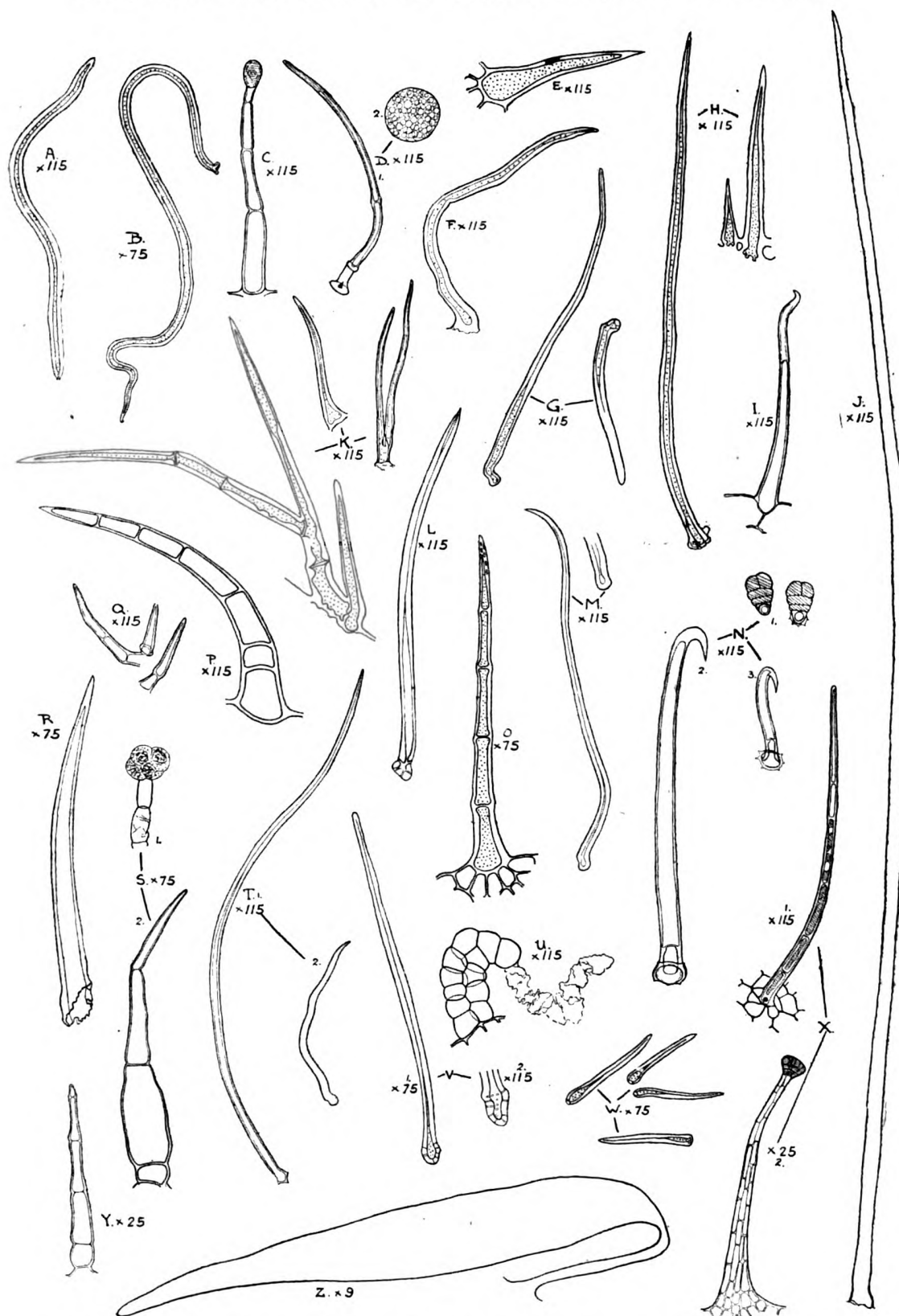
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¹ Proc. Roy. Soc. Med., vol. ix., No. 9, July, 1916, p. 70.

DESCRIPTIONS OF DRAWINGS ON PLATE.

- A. Hair from skin of peach.
- B. Hair from skin of apple.
- C. Glandular hair from tobacco-leaf. The gland is terminal and is shaded in. Frequently it is missing and sometimes it may consist of several cells.
- D. 1. Hair from leaf of sage. 2. Oil gland with granular contents from same source. Exactly similar glands are found in the leaves of thyme and marjoram. They suggest ova in appearance and by their yellowish colouration.
- E. Hair from the interior of the fig.
- F. Hair from skin of pear, close to the remains of the flower.
- G. Thick-walled hairs from tea-leaf.
- H. Two varieties of hair from oat grains. Taken from near the apex. The hairs attached at a lower level have the basal part set at an angle, somewhat like the hairs found on tea-leaves. By this device they are enabled to lie parallel with the long axis of the grain.
- I. Hair from mulberry fruit. When older these are filled with deep yellowish colouring matter.
- J. Long silky hair from inner skin of chestnut. These hairs possess very thin walls.
- K. Three types of hair from barley grains. The branching is characteristic of these hairs alone among food plants.
- L. Hair from strawberry fruit.
- M. Hair from blackberry fruit. The small figure shows the basal portion of a larger specimen.
- N. 1. Gland hairs from surface of young scarlet-runner. 2 and 3. Large and small hooked hairs from the epidermis of the same vegetable.
- O. Hair from leaf of marjoram (culinary herb). The walls of these hairs are covered with minute rugosities, a feature shared also by sage, mint, and thyme.
- P. Hair from leaf of mint.
- Q. Hairs from leaf of thyme.
- R. Hair from rice grain.
- S. 1. Glandular hair from skin of tomato. The glandular portion is shaded. 2. Long hair from skin of tomato suggestive of an insect appendage.
- T. 1. Thick-walled hair from fruit of raspberry. 2. Small thin-walled hair of ditto. These hairs are often much twisted.
- U. Multicellular hair from leaf of dandelion. A peculiar feature of these hairs is that the distal portion is almost always withered in the way shown in the figure.
- V. 1. Hair from wheat grain. Note the blunt apex and the perforations at the base. 2. Base of ditto.
- W. Several hairs from rye grains.
- X. 1. Small hair from fruit of gooseberry. These have a very rough surface and their cells contain highly refractile masses as a rule. 2. Large glandular hair of gooseberry. These are usually visible to the naked eye and the glandular tip bears a superficial resemblance to the head of a tapeworm.
- Y. Large hair from epidermis of vegetable marrow. These hairs are also visible to the naked eye.
- Z. One of the large fleshy hairs which form the pulp of the orange. These are more elaborate structures, possessing an epidermis of their own surrounding a mass of very thin-walled cells. They have also a distinct stalk. The drawing merely shows the outline.

ILLUSTRATIONS REPRODUCED FROM DRAWINGS OF HAIRS FOUND ON EDIBLE PLANTS.



Note.—Where the hair is thick-walled the internal cavity has been dotted in. The hairs figured are more or less average specimens.

exercise a distinctly irritant effect on the mucous membrane of the alimentary canal.

In the identification of any hair the points to which attention should specially be directed are three: (1) The number of cells of which it is composed; (2) the thickness of the wall; and (3) the characters of the base or point of attachment. The length of plant hairs varies considerably, sometimes by as much as 100 per cent., and they are frequently remarkably twisted. The walls of some are characterised by the presence of certain markings—e.g., those found on the culinary herbs, which are warted, and those of the nettle, which show spiral striation.

Certain plants do not possess hairs on the edible parts, and these are merely enumerated here:—Fruits: Pineapples, bananas, currants, and nuts (excepting chestnuts). Vegetables: Roots in general, lettuce, spinach, rhubarb, leeks, and asparagus. Herbs: Parsley and fennel. Cereals: Maize only.

Examples of the hairs found on the other edible plants in common use are appended in the illustrations, which have been made from actual specimens, either by microphotography or with the help of the camera lucida. To those, of course, who are familiar with the appearance of the various kinds of animal parasite met with in the fæces there is no likelihood of plant hairs being mistaken for parasites. The illustrations are intended rather for those who have had no opportunity to become familiar with the appearance of the more uncommon animal parasites met with in the fæces.

Reading.

NOTES ON AN OUTBREAK OF CEREBRO-SPINAL MENINGITIS

AT H.M. TRAINING ESTABLISHMENT, SHOTLEY, AND THE METHOD OF TREATMENT ADOPTED—JULY 14TH TO AUGUST 14TH, 1916.

BY THOS. D. HALAHAN, F.R.C.S. EDIN.,
FLEET-SURGEON, R.N.

THIS outbreak of 19 cases occurred between July 14th and August 14th this year. It is somewhat remarkable because it occurred in the months when cerebro-spinal meningitis cases usually decline and because it came on after a series of 9 isolated cases occurring at Shotley between November, 1915, and July, 1916. Of the 19 cases, 6 yielded proved cultures of the meningococcus from the cerebro-spinal fluid; 1 of the others gave a positive throat swab. It is hard to escape the conclusion that the 13 cases in which the cerebro-spinal fluid did not yield the meningococcus should nevertheless be considered cases of cerebro-spinal meningitis for the following reasons.

1. They are clinically indistinguishable from cerebro-spinal meningitis. I am not depending only on my own judgment for this statement, nor on that of Surgeon E. J. Tongue, who has attended all these cases with the greatest skill and pains. It is also the opinion of Captain Sheffield Neave, R.A.M.C., who saw all the cases (and who has a very large experience of cerebro-spinal meningitis both clinically and bacteriologically), and of Major A. M. N. Pringle, who saw the last 8, among which were the mildest of the cases. Major Pringle has been for many years medical officer of health for Ipswich.

2. They occurred with other proved cases of cerebro-spinal meningitis.

3. Such cases in which the meningococcus is not recoverable have been frequently noted by many writers as occurring during outbreaks—Sophian, M. Foster, Lundie, Thomas and Fleming, and Netter and Debré, &c. Sophian, however, considers that the meningococcus should be recognisable in about 85 per cent. of the cases in certain outbreaks. It has also been stated that many mild cases have been overlooked and called influenza.

4. Even in the 2 fatal cases the meningococcus was not recovered during life, though repeated lumbar punctures were done. It is not surprising, therefore, that it was not recovered from the others.

5. Stiffness of the back and neck were present in all cases, as also were Kernig's sign and headache. Lumbar puncture showed increased pressure in all cases but 1, and a greatly increased quantity of fluid in all but 3, the

average quantity being 63 c.c. instead of the normal 10 c.c. Vomiting was present in 9 cases out of the 13. Many other symptoms of meningitis were present in individual cases.

A short summary of each of the 19 cases is given; the 6 proved bacteriologically are Cases 2, 4, 7, 9, 15, and 17.

CASE 1.—Boy, 16, Dormitory 36; joined barracks Oct. 24th, 1915. Admitted July 14th. Temperature 103° F.; nausea, headache. 15th: Stiffness of neck and back, Kernig's sign, severe headache, photophobia, twitching of muscles, drowsy. Lumbar puncture—increased pressure, 50 c.c. withdrawn. 16th: Condition the same. Lumbar puncture—increased pressure, 70 c.c. Patient improved rapidly, but complained of weakness of right leg on August 1st. August 23rd: One month's leave; went to light duty on return. Still has weakness of right leg.

CASE 2. *Meningococcus found in cerebro-spinal fluid.*—Boy, 16, Dormitory 7; joined barracks July 12th, 1916. Admitted July 19th. Temperature 102.4° F.; malaise, papular rash on chest and arms. 20th: Headache, pain in neck; temperature 103°. 21st: Same; Kernig's sign. Lumbar puncture—increased pressure, 50 c.c., clear. 22nd: Same; vomited twice. Lumbar puncture—increased pressure, 75 c.c., very turbid. 23rd: Headache severe, retraction of head and neck, frequent vomiting, delirious. Lumbar puncture—increased pressure, 70 c.c., turbid. 24th: Same. Lumbar puncture—40 c.c., turbid. This patient afterwards improved rapidly, and went on a month's leave on Sept. 18th.

CASE 3.—Boy, 15, Dormitory 7; joined barracks July 9th, 1916. Admitted July 20th. Temperature 103° F.; malaise, pains in neck. 21st: Temperature 102°; drowsy, Kernig's sign, stiffness of neck and back. Lumbar puncture—increased pressure, 70 c.c., clear; lymphocytes in excess. 22nd: Same; herpes. 23rd: Headache severe, vomiting, photophobia, retraction of head and neck. Lumbar puncture—increased pressure, 60 c.c., turbid. After this the patient improved, and was discharged to a month's leave on August 27th.

CASE 4. *Meningococcus found in cerebro-spinal fluid.*—Boy, 16, Dormitory 7; joined barracks July 6th, 1916. Admitted July 21st with headache, malaise, stiffness of neck, Kernig's sign. Lumbar puncture—increased pressure, 70 c.c., clear. 22nd: Drowsy, vomiting, severe headache, rigor; temperature 102° F. Lumbar puncture—increased pressure, 60 c.c., very turbid. 24th: Marked retraction. Lumbar puncture—35 c.c., turbid; meningococcus found. After this the patient improved and went on a month's leave on Sept. 4th.

CASE 5.—Boy, 15, Dormitory 7; joined barracks July 5th, 1916. Admitted July 21st. Temperature 103.8° F.; headache, pain in neck, Kernig's sign. Lumbar puncture—increased pressure, 80 c.c., clear; polymorphs in excess. 22nd: Temperature 103°; very drowsy, headache, retraction of neck, no vomiting. Lumbar puncture—increased pressure, 75 c.c., cloudy. 23rd: Very much better. The patient rapidly improved up to August 8th, when he had recurrence; headache, pain in neck, dazed, knee-jerks exaggerated, Kernig's sign, signe de la nique, Brudzinski's sign. Lumbar puncture—increased pressure, 65 c.c., clear. August 9th: Vomiting, headache, herpes, stiffness of neck. The patient improved again steadily, and was sent on a month's leave on Sept. 4th.

CASE 6.—Boy, 17, Dormitory 41; joined barracks Nov. 10th, 1915. Admitted July 22nd with vomiting, headache, and nausea. Temperature 100° F. 23rd: Kernig's sign, pain and stiffness of neck and back. Lumbar puncture—increased pressure, 65 c.c., clear; polymorphs in excess. 24th: Improving; headache, pain in neck and back up to August 11th, Kernig's sign still present, and headache frequent. The patient was sent on a month's leave on Sept. 3rd.

CASE 7. *Meningococcus found in cerebro-spinal fluid.*—Boy, 15, Dormitory 12; joined barracks July 6th, 1916. Admitted July 22nd in a dazed condition, unable to speak or hear, pain in neck, Kernig's sign. 23rd: Condition same; temperature 100.6° F. Lumbar puncture—increased pressure, 70 c.c., clear. 24th: Temperature 103°; still unable to speak, vomiting, hæmaturia, severe headache, pain in back of neck. Lumbar puncture—increased pressure, 65 c.c., turbid. After this the patient rapidly improved, and was sent on a month's leave on Sept. 3rd.

CASE 8.—Boy, 17, Dormitory 6; joined barracks May 19th, 1916. Admitted July 22nd with sore-throat, headache, and nausea. Temperature 103° F.; vomiting, some rash on chest, drowsy, stiffness of back, Kernig's sign. Lumbar puncture—increased pressure, 70 c.c., clear; cells in excess, polymorphs and lymphocytes equal. 23rd: Vomiting, headache, pains in neck and back, retention of urine. 24th: Marked improvement; retention of urine continues. After this the patient gradually improved, and was sent on leave on August 19th.

CASE 9. *Meningococcus found in cerebro-spinal fluid.*—Boy, 16, Dormitory 29; joined barracks July 21st, 1916. Admitted July 24th with headache, stiffness of back, and Kernig's sign. Lumbar puncture—increased pressure, 55 c.c., clear. 25th: Frequent vomiting, headache severe, retraction of neck, drowsiness. Lumbar puncture—increased pressure, 50 c.c., turbid. After this the patient steadily improved; he had a papular rash, however, from August 6th to 8th. Sent on a month's leave on Sept. 4th.

CASE 10.—Boy, 15, Dormitory 28; joined barracks June 9th, 1916. Admitted July 24th with erythematous rash on trunk and limbs. Temperature 99.8° F.; stiffness of neck and back, Kernig's sign. Lumbar puncture—increased pressure, 75 c.c., clear; lymphocytes in excess. 25th: Headache, vomiting, pains in neck and back. 26th: Same. The patient improved rapidly, and was sent on a month's leave on August 24th.

CASE 11.—Boy, 16, Dormitory 20; joined barracks June 9th, 1916. Admitted July 27th with headache, pains in neck, and Kernig's sign. Lumbar puncture—increased pressure, 50 c.c., clear. 28th: Headache, vomiting, pain in back of neck. This was a mild case and the patient improved rapidly. He was sent on a month's leave on August 27th.

CASE 12.—Boy, 16, Dormitory 28; joined barracks June 9th, 1916. Admitted July 27th with pains in legs, stiffness of neck and back, and Kernig's sign. 28th: Stiffness and pain in back continued, reflexes exaggerated. This was a very mild case. Lumbar puncture—pressure normal, clear. The meningococcus was recovered from a throat swab.

CASE 13.—Boy, 15, Dormitory 13; joined barracks May 10th, 1916. Admitted July 27th with headache, a temperature of 100° F., stiffness of neck and back, and Kernig's sign. 28th: Condition same. Lumbar puncture on 29th; pressure normal, clear. 30th: Vomited several times. This was another very mild case. Duty on August 29th.

CASE 14.—Boy, 17, Dormitory 28; joined barracks June 23rd, 1916. Admitted July 28th with stiffness of neck and back and Kernig's sign. Lumbar puncture on 29th showed increased pressure, fluid flocculent. The patient improved rapidly, and was sent to duty on August 30th.

CASE 15. *Meningococcus found in cerebro-spinal fluid.*—Boy, 16, *Ganges* ship. Admitted July 29th with mild sore-throat; symptoms of cerebro-spinal meningitis only appeared on August 2nd; pain in back of neck, Kernig's sign, nausea, and vomiting. Lumbar puncture—increased pressure, 75 c.c., slightly turbid. August 3rd: Frequent vomiting, severe headache, pains in back of neck; temperature 101.8° F. 4th: Very restless, severe headache and backache, retention of urine, retraction of head. Lumbar puncture—increased pressure, 90 c.c., yellow. The patient died next day. Meningococcus grown from post-mortem specimen of cerebro-spinal fluid, but not in life.

CASE 16.—Boy, 16, Dormitory 14; joined barracks July 6th, 1916. Admitted August 4th with temperature of 102.4° F., headache, stiffness of neck and back, marked Kernig's sign, nausea. Lumbar puncture—pressure normal, 35 c.c., clear. 5th: Severe backache, headache, vomiting. 9th: Very much better. The patient improved regularly, and was sent on a month's leave on Sept. 4th.

CASE 17. *Meningococcus found in cerebro-spinal fluid post mortem.*—Boy, 16, Dormitory 31; joined barracks March 14th, 1916. Admitted June 22nd with malaise and a temperature of 101.2° F. No definite signs of disease could be recognised. The temperature ran an irregular course and at times the patient's stool suggested typhoid. Blood negative to Widal's reaction. Cerebro-spinal meningitis symptoms first appeared on August 9th—pain and stiffness of neck and back, tremulous tongue, severe headache, Kernig's sign, vomiting. Lumbar puncture—increased pressure, 65 c.c., clear. 11th: Kernig's sign, Brudzinski's sign, Macewen's sign, signe de la nique, and Babinski's sign all present. Lumbar puncture—increased pressure, 47 c.c., straw-coloured. 13th: Much pain, headache, backache; temperature 101°. Lumbar puncture—increased pressure, 50 c.c., opalescent. 15th: Retention of urine in addition to other symptoms. Died on the 21st. The meningococcus was recovered from a post-mortem specimen, but not in life.

CASE 18.—Boy, 16, Dormitory 21; joined barracks May 12th, 1916. Admitted August 13th with a temperature of 102.8° F., back and neck very stiff and painful, knee-jerk absent, slight papular rash on trunk, Kernig's sign, Brudzinski's sign, Macewen's sign, and signe de la nique all present. Lumbar puncture—increased pressure, 65 c.c., clear. 14th: Condition same; vomited several times. Special signs present as before. 15th: Much improved. 24th: Patient vomited; also a red papular rash on limbs. Further vomiting on August 31st and Sept. 1st. On Sept. 10th the patient went on a month's leave.

CASE 19.—Boy, 17, Dormitory 41; joined barracks August 11th, 1916. Admitted August 14th (three days after

joining from *Powerful*) with a temperature of 104° F., sore-throat, and headache. 15th: Intense pain at back of neck and in back, severe headache, knee reflex absent, Kernig's sign. Lumbar puncture—increased pressure, 56 c.c., clear. 16th: Great improvement, which continued next day. After this the patient made an excellent recovery. He was sent on a month's leave on Sept. 9th.

All these cases were treated by the advice of Captain Sheffield Neave on similar lines: early puncture, free washing out of the spinal canal with $\frac{1}{2}$ per cent. solution of carbolic in normal saline, and then injection of Pasteur serum, prepared from Gordon's strains, into the canal.

I wish to draw attention to the admirable results obtained in these 19 cases by the above method, though, of course, one cannot generalise from so small a number. Out of 19 cases only 2 were fatal.

Each lumbar puncture shown in the summary of cases was followed by the washing out and injection. The last 2 cases were injected with Lister Institute serum prepared from Gordon's strains; the dose of this is 30 c.c., as against 10 c.c. in the other.

As to the origin of the outbreak it seems scarcely necessary to look beyond Shotley. The dormitories affected were 11 in number, mostly widely apart; there are 36 dormitories in Shotley. One case came from *Ganges* ship.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ELECTRO-THERAPEUTICS.

Pharyngeal Pouches.

AN ordinary meeting of this section was held on Dec. 15th, Dr. G. HARRISON ORTON, the President, being in the chair.

Captain N. S. FINZI read a paper, supplemented by a series of skiagrams, on "Pharyngeal Pouches." He first discussed the situation and origins of such pouches. Usually, by the time the radiographer saw a pharyngeal pouch it had reached an advanced stage, sometimes so advanced that it obstructed the œsophagus by pressing upon the contents. His present purpose was to treat of the subject of diagnosis from the X ray appearances. He found that the best substance to give the patient to eat with the object of facilitating the radiographic representation was a semi-solid paste of bismuth oxy-chloride. The consistency should be such that it did not flow back immediately to its natural level. Such a paste was found to adhere to the pharynx for an appreciable time. He regarded as very important the examination of cases of suspected pouch by the fluorescent screen; otherwise much difficulty was experienced in differentiating them from malignant strictures. The diagnostic feature to watch for was the way in which the bismuth that had been given left the pouch. If the condition were a pharyngeal pouch, the bismuth could be seen leaving the mouth of the pouch, and passing thence straight into the œsophagus. Sometimes it was exuded in that way by the contraction of the muscles of the throat. In the conditions with which such pouches were liable to be confused—i.e., carcinomatous or fibrous strictures—the bismuth was arrested, and later it could be seen leaving the centre or the lower end of the dilated œsophagus. He showed a number of skiagrams to illustrate the points. Sometimes a pouch became inflamed, and an indentation formed at the lower end in consequence of adhesions having occurred. One case in which the diagnosis was very obscure was that of a very old and weak patient in whom some of the bismuth given passed into the trachea and into one bronchus. It was natural to suppose there was a growth, which was causing complete obstruction, and that some part of the bismuth was escaping through a sinus into the trachea. It proved, however, to be a pouch. He found that a true lateral view gave a far better idea of the condition in these pouch cases than did any other. In the case of a very large pouch it was well to place the X ray tube some distance off, so as to have parallel rays impinging, and to correct distortion. If the pouch were somewhat low, and the patient was a tractable one, he should be bidden to commence to swallow and try to retain the larynx in that higher

position for a brief space. One patient with a large pouch had been operated upon three years previously by gastrostomy because he was supposed to have carcinoma. Had he been examined with the œsophagoscope the mistake could scarcely have been made. When the pouch had been discovered it was removed. After viewing these cases with the screen his practice was to take a plate also, as the details in the latter assisted in the diagnosis. His patients were always examined in the standing posture. He did not think spasmodic stricture came into the diagnostic problem, because it was unlikely to occur in this situation. Fortunately, a fibrous stricture was rare in this region, as its diagnosis from a pouch might be very difficult. Pharyngeal pouches were supposed to be very rare, but the eight cases, pictures of which he had shown, occurred in his private practice in the course of five and a half years. Usually the presence of these pouches was not suspected until they became large enough to cause symptoms.

Dr. DUNDAS GRANT, Dr. STANLEY MELVILLE, Dr. W. H. KELSON, and Dr. IRWIN MOORE discussed the paper, and Captain FINZI replied.

Dr. R. W. A. SALMOND gave a skiagraphic demonstration of the changes observed in osteomyelitis of different origins, basing his contribution upon three essentially different cases of osteomyelitis in the long bones. The X ray pictures were taken at intervals over a course of years, and afforded an instructive demonstration of the bone destruction and the subsequent laying down of new bony tissue.

HUNTERIAN SOCIETY.—A meeting of this society was held on Dec. 13th, Dr. Andrew S. Currie, the President, being in the chair.—Dr. Hingston Fox read a paper on the Use of Antimony in Ancient and Modern Medicine. After a brief allusion to Hebrew and Greek records, Dr. Fox said that the drug was long applied as an astringent and caustic. Its internal use seems to date from the end of the sixteenth century, when the famous "Curus Triumphalis Antimonii" extolled it as a remedy for all the ills of the body. The drug was as vehemently denounced by the Galenists, but during the next two centuries it was in large employ. Fothergill combined antimony with aloes in his once well-known pill. In Plummer's pill it was mixed with calomel and guaiacum. By Cullen's time antimony was known as an "alterative." Soon after this the French school introduced the remedy in the treatment of inflammations, especially in pneumonia. It displaced blood-letting and gave much better results. Trousseau was its latest exponent, but T. K. Chalmers and others showed that pneumonia recovered more readily without antimony, and so this drug was gradually disused and has fallen into neglect. Lately its chemical affinity to arsenic has led to the use of antimony in trypanosomiasis, kala-azar, syphilis, and yaws with good results. A case of the first-named disease was related. It was suggested that the alterative properties, on which the old physicians laid stress, were in reality based upon a control of chronic affections.—Amongst those who discussed the paper were Dr. C. Couper Cripps, who pointed out that many years ago he was led to use antimony wine with an alkali in cases of lichen planus.—Dr. F. Parkes Weber dwelt upon the value of an emetic in respiratory diseases, when given at the commencement of treatment, which clears the bronchi of accumulated mucus.—Dr. Thomas Dutton said that he had used antimony in pneumonia for a generation, and had so much confidence in it that he seldom required other drugs. It was a great pity, he thought, that antimony was not more used in general medicine. Its value in pneumonia and chronic bronchitis was also upheld by the President.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Dec. 8th at Leeds General Infirmary, Dr T. Churton being in the chair.—A communication on Cerebro-spinal Meningitis was made by Major C. W. Vining. In discussing the symptoms of the disease, cases were cited illustrating the remarkable variation in the intensity of the infection, and emphasis was laid upon the possibility of cases being missed unless the fact that the disease could occur in a mild form was kept in mind. The onset in Major Vining's cases was consistently sudden, a though in about half of them it was preceded by indefinite symptoms, such as catarrh of the respiratory passages, intermittent headache, or sensation of chilliness. The symptoms of the developed condition were fairly consistent practically all experiencing acute headache and changed mentality; while vomiting at the

onset was common. A purpuric rash was the exception rather than the rule, and when it had occurred it appeared early and in the more malignant type of case. In discussing the treatment of the cases, the importance of frequent lumbar punctures and the administration of antimeningococcal serum was insisted upon. Referring to the bacteriological side of the subject, it was pointed out that quite a number of undoubted cases failed to show the meningococcus in smear preparations of the cerebro-spinal fluid, and even on cultivation growth was sometimes not obtained. If, however, the fluid was first incubated by itself or in conjunction with serum broth, a growth was nearly always obtained on plating the incubated material. The importance of the examination of contacts and the isolation of the carrier was discussed, and in connexion with this it was pointed out that quite a number of people amongst the general population harboured a Gram-negative diplococcus in the naso-pharynx which was indistinguishable by all the present known tests from the meningococcus. Present evidence seemed to show that cases of the disease, at any rate in its endemic form, developed amongst the carrier population, and Major Vining brought forward information to show that meteorological conditions appeared to be related to the occurrence of cases. He showed that a high rainfall consistently preceded cases, and was usually accompanied by a low rapidly fluctuating barometer, a series of high relative humidities, and low temperature. Before the paper Major Vining demonstrated the agglutination test, and showed a series of plate cultures from cases and from positive contacts.—A number of cases and specimens were also shown.

HARVEIAN SOCIETY OF LONDON.—A meeting of this society was held at the Stafford Rooms, Tichborne-street, W., on Dec. 7th, Dr. Edmund Cantley, the President, being in the chair.—Dr. B. H. Spilsbury read a communication entitled "Sudden Death," defining the scope of the paper as the consideration of those forms of death which occur in apparently normal persons or in those not thought to be seriously ill, thus necessitating coroners' inquiries. Selecting especially the more difficult and obscure cases of sudden death, he gave examples due to diseases of the circulatory, respiratory, and nervous systems. He then illustrated deaths from shock by several examples, and finally analysed deaths from anaesthetics according to (1) the anaesthetic and (2) the morbid process, the latter group being subdivided according to the presence or absence of status lymphaticus.

LIVERPOOL MEDICAL INSTITUTION.—A meeting of this society was held on Dec. 14th, Major C. J. Macalister being in the chair.—Major J. M. Beattie read a note on Hypochlorous Acid as a Disinfectant for the Throat, &c. The solution may be prepared by the electrolysis of a 3 per cent. saline solution—a current of 1 ampère running for an hour and a half between carbon poles immersed in the liquid producing a suitable strength. He exhibited a simple electrical apparatus by which the solution could be kept in motion during the process of electrolysis. He showed by an analysis of the cases treated by this disinfectant, which should in all cases be freshly prepared, that the throat in cases of diphtheria was free from infection seven to ten days earlier than when the ordinary disinfectants were used. The solution may be used with a spray or applied to the throat with a swab.—Mr. T. C. Litter Jones contributed an interesting note on Gas Gangrene, illustrated by colour photographs and sketches, and related his experiences of the treatment of the disease in those under his care in the Liverpool Merchants' Hospital in France, to which he had recently been attached. He exhibited several radiographs which showed clearly the collections of gas in and round the muscles. In discussing the treatment of the condition he emphasised the importance of prompt and drastic surgical interference by incision and in many cases by amputation.

LONDON DERMATOLOGICAL SOCIETY.—A meeting of the above society was held at St. John's Hospital for Diseases of the Skin on Dec. 19th, Dr. W. Knowsley Sibley, the President, being in the chair.—Clinical cases were shown by Dr. Morgan Dockrell, Mr. Christopher R. Kempster, and Captain W. Griffith. The President brought forward a series of seven cases of Alopecia, three boys and four women, the majority of which were "totalis" form originally; a free growth of young hair was observed in all the cases which had been treated by small doses of X rays and ionisation.

Reviews and Notices of Books.

Diseases of Children.

By A. DINGWALL FORDYCE, M.D. Edin., F.R.C.P. Edin., Lecturer on Diseases of Children, School of Medicine of the Royal College, Edinburgh. London: A. and C. Black, Limited. 1916. Pp. 483. Price 10s. 6d.

In this volume the author has attempted to provide for the use of students and practitioners a small but complete text-book of pædiatrics written on distinctly novel lines. Nearly all text-books on the diseases of children with which we are acquainted have been arranged in accordance with certain conventional and time-honoured traditions—that is to say, certain sections are devoted to diseases of the various systems, the digestive, the respiratory, the circulatory, and so on, while others deal with disorder of metabolism, nutrition and growth, and others with the infective processes. In this new work Dr. Fordyce has adopted the plan of arranging all the subject-matter dealt with on a systematic basis. This method appears to us to have involved the author in a great number of very difficult situations, and we cannot convince ourselves that the sacrifices which he has made to adhere to this plan have afforded any commensurate compensations in respect to uniformity or consistency of design.

The author has respected tradition in so far as the introductory chapters are concerned. Thus in common with other text-books we find a chapter on the healthy child, the examination of the sick child, the diseases of the newborn, and so on. These chapters are followed by one on congenital syphilis, which appears as difficult to consign to its proper niche in the system as tuberculosis, which for some reason or other is interpolated between a chapter on diseases of the alimentary system and another on diseases of the ductless glands, which, by the bye, covers diseases of metabolism also. The exact location of rheumatism appears also to have presented difficulties, for along with chorea it has a chapter to itself sandwiched in between one on diseases of the circulatory system and another on acquired heart disease. To give a few other instances of the dilemmas into which this systematic method leads the author, we may mention that mumps is forced into the chapter on diseases of the mouth and throat, measles into that on diseases of the respiratory system, and enteric into that on diseases of the alimentary system.

We are inclined to think that the author's evident penchant for the *reductio ad simplicissimum* will be better appreciated by the student who is learning than by the practitioner who meets with the difficulties and realities of disease in the living subject. When reading certain of the chapters which deal with some of the most difficult problems in medicine, one cannot help being struck with the simplicity and the straightforwardness of the solutions which are provided. This method of reduction to the simplest possible terms finds one of its most striking examples in the chapter on the artificial feeding of infants. With certain judicious reservations the author relieves this subject of most of its difficulties by submitting certain uncomplicated formulas which he assures us give the best results when put into practice. These formulas are as follows: for the first month of life the infant is to be fed on a mixture of one part of milk and two parts of water, for the third month of life the strength is to be in the proportion of one part of milk and one part of water, and for the sixth month two parts of milk and one part of water, and so on for the remaining months. When we add that these mixtures may be reinforced with a small quantity of cream and sugar we know all that there is to be learned from these pages with respect to the compounding of food for the average healthy infant. This method appears to us to be altogether too simple; it is the method which towards the end of the last century gave the manufacturer of patent foods his opportunity and the faddist his occasion to elaborate strange and weird practices.

Apart from these serious objections on the ground of arrangement and on the ground of too much simplification we have only praise for Dr. Fordyce's new book. It is certainly accurate, extremely easy to read, and very complete. It is profusely illustrated, and printed with excellent headlines which catch the eye and emphasise the important points.

Growth in Length: Embryological Essays.

By RICHARD ASSHETON, M.A., Sc.D., F.R.S., Lecturer in Biology at Guy's Hospital, Lecturer in Embryology at the Imperial College, and Lecturer in Animal Embryology in the University of Cambridge. With 42 illustrations. Cambridge: At the University Press. 1916. Pp. 104. Price 2s. 6d. net.

To review a posthumous work of Richard Assheton is a melancholy duty. To those who knew him personally his death has brought the loss of one of the gentlest and most lovable of gentlemen: to science the loss has been of the most thorough and painstaking of embryologists. During his lifetime Assheton published many papers, each one distinguished by its thoroughness and accuracy, and we are glad to see that this volume contains a complete bibliography of his contributions to science. Two quite distinct portions are contained in the book, and only the first deals, strictly speaking, with growth in length; the second being a reprint of his well-known criticism of Driesch's conception of entelechy. The first portion of the volume contains the subject matter of three advanced zoological lectures delivered as part of the curriculum of London University at Guy's Hospital in 1913. It is in this part that most interest and novelty lies, and the thanks of all workers in embryology are due to Mrs. Assheton for publishing the lecture notes arranged by her husband.

In the preparation of the manuscript Professor Stanley Gardiner and Professor J. P. Hill have given their assistance, and the result is an eminently authoritative account of the early stages of development of a wide series of animal types. The main conclusion of the work—that these early stages give no indication whatever for imagining that chordates are derived from highly organised invertebrates—is based upon the study of the relation of the growing body axis to the plane of the gastrula in chordates and invertebrates respectively. Not only this, but there is also the very definite finding that the differences displayed are so great that there is no alternative to believing that the chordates arose as far back as the coelenterates or their immediate descendants.

The volume is a record of a life's work of accurate and painstaking observation.

LIBRARY TABLE.

Clinical Methods: A Guide to the Practical Study of Medicine. By ROBERT HUTCHISON, M.D. Edin., F.R.C.P. Lond., and HARRY RAINY, M.D. Edin., F.R.C.P. Edin. Sixth edition. London: Cassell and Co., Limited. 1916. Pp. 664. Price 10s. 6d. net.—The sixth edition of this indispensable manual has only increased in size by eight pages, but reference to the matter shows that a thorough revision has taken place, which has naturally resulted in many changes in the chapter on clinical bacteriology. A paragraph is inserted on modern methods of examination of the myocardium, and the nomenclature of the B.N.A. has been given in brackets after the old anatomical names. Altogether the book merits the large circulation which it has achieved.

Help for the Deaf: What Lip-reading is. By E. F. BOULTBEE. London: Hodder and Stoughton. 1916. Pp. 196. Price 2s. 6d.—Miss Boulbee's book is a welcome addition to the limited literature dealing with lip-reading and with the benefits brought by it both to the adult deaf and to those who have lost their hearing after the acquisition of language. Miss Boulbee not only writes as an experienced and sympathetic teacher, but as one who has retained all her original enthusiasm for her work and has in no wise neglected her ideal, that of placing the deaf person as far as possible on a level with the hearing. Lip-reading, as she points out, may prove of inestimable value, mentally, morally, and physically, to the person who masters the art. She explains how it develops alertness, closeness of observation and concentration among the deaf, helping them to hold at bay a tendency to apathy and suspicion, and rousing them from a form of self-absorption to which they are naturally liable, and which so often leads to definite ill-health. She does not attempt to disguise the difficulty either of teaching or acquiring the accomplishment of lip-reading—the task undertaken by both tutor and disciple is a hard one; but she shows how the deaf people who master the art acquire also cheerfulness and tact in the relations of life which go far to enable them to take an ordinary place

in society. A section of the book sets out the phonetic sounds of the alphabet, as distinguished from the "names" of the letters, with the positions assumed by the tongue and lips in the utterance of the sounds. Another section gives the hearing reader some idea of the difficulty experienced by deaf children in the comprehension of idiomatic language, a point that needs to be grasped by people who deal with those who are short of a valuable sense. The serious parts of the book are interspersed with anecdotes which, whilst making it easy and attractive reading, give courage to the deaf reader, and should enlighten hearing friends as to their difficulties. Miss Boulton's book does not quite replace Mr. Nitchie's book on lip-reading, which goes further in many directions, but we cordially recommend it to those for whom it has been written.

Appleton's Medical Dictionary. Edited by SMITH ELY JELLIFFE, M.D., assisted by CAROLINE WORMELEY-LATIMER, M.D. London and New York: D. Appleton and Co. 1916. Pp. 945. Price 15s. net.—The editor of this handsome and convenient volume speaks of language as the chief tool of the intellect, and offers his dictionary as an instrument for a service reaching far beyond itself to the minds which are to supply the motive and directing force. He is himself a professor of diseases of the mind and has had the assistance as special contributing editors of University teachers in anatomy, physiology, chemistry, pharmacology, medicine, gynaecology, and pathology. The result of this collaboration is a dictionary complete in medical and ancillary terms, with accurate definitions and formulae, and with full names and dates to authors. An appendix of 50 pages contains notes on analyses of body fluids, dietaries, the feeding of babies, common poisons, and other useful matter, while many tables are incorporated in the text. During six months' use we have noticed a few slips of a minor character, but the volume is likely to compete with success in the struggle for existence among medical dictionaries.

1. *Mysteries of Life: A Book for Boys and Girls.* By STANLEY DE BRATH, M.Inst.C.E. London: George Allen and Unwin, Limited. 1915. Pp. 260. Price 4s. 6d. net.—
2. *The World's Wonder Stories for Boys and Girls.* By ADAM GOWANS WHYTE. London: Watts and Co. 1916. Pp. 270. Price 6s. net.—Mr. de Brath, who was lately headmaster of Preston House Preparatory School at East Grinstead, has no lower aim than to give to boys and girls a working perception of the presence of God in nature and in themselves. He asks the questions What? How? and Why?, and answers them by describing the history of the earth, the mysteries of sex, pain, and the kingdom of heaven. Most of what he writes is far above the head of any ordinary child, and much of it deals freely with the sad and sordid things of life. But Mr. de Brath has the mystic's mind and a gentle touch, and youthful readers will not be harmed by his frankness, while teachers will find material for many a useful lesson.—*"The World's Wonder Stories for Boys and Girls"* is another book and an excellent one, to arm the older person against the child's questions: How? Why? When? and Where? It introduces the child to astronomy, biology, the origins of religion and morality in a way which he can readily apprehend. A number of excellent illustrations have been borrowed from many sources and the cover is embellished with an appropriate coloured design by H. S. Take, R.A.

Outlines of Medical Jurisprudence with Special Treatment of Toxicology and Insanity. By RAMES CHANDRA RAY, L.M.S., Lecturer on Forensic Medicine, College of Physicians and Surgeons of Bengal, Calcutta. Third edition. Calcutta: The Hare Pharmacy. 1916. Pp. 494. Price 4 rupees.—The author has added 40 pages to his work, embodying four years of experience, since the last edition. We have already remarked on his genius for compression, and although there are a few verbal misprints there is hardly an unnecessary word in the whole book. The "mass of useful tables," as the author calls it, in the appendix has been added to.

JOURNALS.

Quarterly Journal of Experimental Physiology. Editors: E. A. SCHÄFER, W. D. HALLIBURTON, C. S. SHERRINGTON, E. H. STARLING, and A. D. WALLER. Vol. X., No. 1. London: Charles Griffin and Co., Limited. 1916. Pp. 1-95. Price 7s. 6d.—The whole of this number is occupied with a

combined physiological and psychological study of Cutaneous Sensation after Nerve-division, by Edwin G. Boring, describing work done in Cornell University, and illustrated by 98 figures in the text and a plate. Trotter and Davies supplemented Head's work on the changes in the sensibility of the skin upon the division and suture of a cutaneous nerve, and the author has followed with intensive work on the lines of Trotter and Davies. He insists as an important factor on the introspective competence of the subject. The work is the product of two laboratories—physiological and psychological. The cutaneous sensations—sensibility of the hairs, two-point discrimination and localisation over the greater part of the volar surface of the left forearm—were tested before the nerve selected for division, the anterior branch of the internal cutaneous of the left arm, was divided. For 15 months preceding the operation the subject devoted from three to eight hours a week to preliminary work, during which he was practised in the discrimination of two points, and in localisation, in order to obtain quantitative norms of the area investigated. Contact, penetrating and dull pressure, granular pressure and sharpness were investigated, and the conclusion is reached that there are four indisputable qualities that appear upon mechanical stimulation of the skin; tickle-contact, penetrating pressure, dull pressure, and sharpness, the usual but less descriptive terms being: contact, cutaneous pressure, subcutaneous or deep pressure, and pain. Deep pressure and cutaneous pressure are introspectively distinguishable. Warmth and cold did not present the same introspective difficulties as did pressure and pain. The means employed for the study of each cutaneous sensation are fully described in the text. Section of the nerve on the author himself was made on Jan. 10th, 1913, at a definite position, and thereafter pressure, pain, cold, warmth, distribution of sensibility, return of sensibility, localisation, and two-point discrimination were all investigated quantitatively. A careful study of the paper will well repay the student of neurology.

The Philippine Journal of Science, Section B, Tropical Medicine. Vol. XI., No. 3.—Taking the view that disease is not infrequently acquired from infection while bathing, and that it is of paramount importance that water used for bathing should be free from infectious material, Mr. Charles E. Gabel, of the Biological Laboratory, Bureau of Science, Manila, instituted a series of bacteriological examinations of certain swimming pools in that city, and has embodied his observations in a paper in this number of the *Journal*. Bathers who fail to cleanse themselves properly before entering such a pool, or those who are chronic carriers or disseminators of pathogenic organisms, may contaminate the water, and thus infect other bathers. Exaggerated accounts of public bath infections have caused many persons to look with aversion upon water that has been in contact with other people. Certain experiments were carried out by Mr. Gabel, and as a general result he states that when no disinfectant was added there was a steady increase in the number of bacteria in the swimming pools. This increase was exceedingly high on the last day of the week during which the water had been used. When disinfectants were added the bacterial curve was lowered and often became more irregular. Copper sulphate applied at the beginning of the week permitted an increase throughout the period; sometimes, however, a slight reduction occurred. Calcium hypochlorite applied once a week showed good effects at first, but permitted an increase of bacteria towards the end of the week. A daily addition amounting to 0.25 part of available chlorine per million parts permitted a considerable increase of bacteria, while 0.5 part gave the best results. When the comparative costs and disinfecting power are considered, antiformin and copper sulphate are not so valuable as calcium hypochlorite. The latter when added daily in amount equivalent to 0.5 part chlorine per million parts water, is recommended for the disinfection of these swimming pools, as it is the best and most economical means of keeping the number of intestinal and other bacteria within safe limits throughout the week during which the water is in use.—The second of the two papers comprised in this number of the *Journal* is by Dr. E. H. Ruediger, who continues his studies on the Wassermann reaction with glycerinated human serum. His new experiments corroborate generally his previous conclusion, that chemically pure glycerine is a suitable preservative for human serum which is intended to be tested by the Wassermann reaction.

THE LANCET.

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THE ANNUS MEDICUS 1916.

MEDICINE.

DURING the past year the attention of physicians has mainly been directed to matters associated with the health of the troops. Thanks to the vast and continuous efforts of the officers of the Royal Army Medical Corps the amount of preventable disease has been reduced to a minimum, and the effects of the campaign on the nervous system have been productive of more research and observation than have the infectious fevers.

Dysentery.

When the evacuation of Gallipoli was accomplished the number of cases of dysentery in the Expeditionary Force rapidly became less; consequently the opportunity of studying the acute cases was lost, but doubtless much remains for investigation in following up the more chronic forms.

In a paper delivered before the Royal Society of Medicine Lieutenant-Colonel Sir RONALD ROSS recorded the results which have been obtained in the treatment of dysentery, especially in regard to the amoebic form. He strongly urged as a routine treatment the hypodermic injection of emetine hydrochloride, and supported the orders of the Principal Director of the Medical Services of the Mediterranean Forces that it should be used in every case of suspicious dysentery without waiting for a definite diagnosis as to the exact nature of the case. He pointed out that there can be no doubt that the sooner treatment is commenced the more it is likely to succeed. Once the amoebæ have begun their destructive trenching and mining under the mucosa of the intestine there is apparently in many cases no natural limit to their activities, and they will soon end by removing up to 90 per cent. or more of the surface. Every hour, therefore, counts at the beginning of the infection, and the delay of a few weeks often means almost irreparable ruin to the colon, even if the patient survives. The opinion was also expressed that unless there was very strong reason for continuing emetine it should be remitted, at least for a time, after about ten days.

Attention has been drawn to the treatment of amoebic dysentery with emetine bismuth iodide, and considerable success has been claimed. The amoebæ disappeared rapidly, as did also the blood and mucus, together with the pain and other symptoms. But as Dr. G. C. LOW and Mr. C. DOBELL pointed out, whether or not a complete sterilisation has been effected can only be determined by examinations conducted over a long period of time. These observers also found that this compound of emetine produces much more disagreeable symptoms than emetine hydrochloride given by the needle. Some of the patients suffered so much from vomiting and diarrhoea that the treatment had to be discontinued.

Typhoid Fever.

Captain T. H. WHITTINGTON, R.A.M.C.(T.), published a report on the use of stock vaccine in infection by the *Bacillus typhosus*, with an analysis of 230 cases. One half of these were on vaccine treatment, and the other half were the selected controls. The results were not encouraging. It would appear (a) that it is in just those cases in which the physician so much requires help that vaccine is disappointing; (b) that vaccine neither shortens the fever nor reduces the number of complications in even that class of case which is likely to do well; and (c) that there is a decided suspicion that vaccine increases the incidence of hæmorrhage. Naturally the conclusion arrived at in this report is that the use of a stock vaccine in typhoid cannot be recommended as a routine treatment.

In inoculated individuals the diagnosis of the enteric fevers not infrequently gives rise to difficulties. Several

investigations have been carried out on this subject. Major G. DREYER, R.A.M.C., and Captain E. W. AINLEY WALKER, O.T.C., furnished a report to the Medical Research Committee in which some interesting results were mentioned in regard to the agglutinin reaction. In a certain number even of the mildest cases of these infections the rise and subsequent fall in the agglutinin titre are so definite that the diagnosis could never be in doubt. But in other cases the rise and fall of the curve are much less marked, and differences of opinion may exist as to whether the case is of active infection or not. In order to assist in the elucidation of such cases these observers formulated certain points which are of importance in the interpretation of the agglutinin curves, and these should be of practical value in assisting clinical work.

Paratyphoid Fever.

We published an interesting communication on paratyphoid fever in our issue of Feb. 26th by Lieutenant-Colonel W. H. WILCOX, R.A.M.C., based on his experience in the Mediterranean area. He estimates that paratyphoid is undoubtedly at the present time the most important disease to be considered from the military point of view, since by its frequent occurrence at all periods of the year it causes such a large amount of incapacity for duty. It is a preventable disease, and every means must, of course, be taken to preclude its occurrence. Amongst the chief measures mentioned by him are the following: 1. Early recognition of the clinical symptoms of the disease and early clinical diagnosis, which must be acted upon without delay. 2. Bacteriological investigation for the early diagnosis of cases and for the recognition of suspected carriers of the disease. 3. General preventive measures, such as disinfection of clothing, bedding, tent, &c., of the patient. 4. Prophylactic inoculation against the disease.

Typhus Fever.

Typhus fever in Serbia formed the subject of the Chadwick lectures delivered at the Royal Society of Medicine by Dr. R. O. MOON. He gave an interesting account of his experiences in Serbia and the difficulty experienced in dealing with the outbreak. He stated that although the specific cause of typhus fever has not yet been definitely demonstrated, yet all analogy points to its being due to a micro-organism, and that it is conveyed by means of lice. Hence, the most direct way of stopping the spread of the disease is to destroy the lice, and he described the measures of inspection and disinfection which should be adopted. With regard to treatment, he maintained that absolute rest in bed was, of course, essential. The sick-room should be large and airy, with the windows open night and day, and as far as possible the hospital attendants should be individuals who have been rendered immune by an attack of the disease. Thorough ventilation was really the most important factor in the treatment; and not only is it the most efficacious antipyretic but it also has a very favourable effect upon the nervous system; the violent headache and insomnia of the early stages of the disease are lessened by this method more than by anything else. The intensity of the delirium is diminished and the mental condition of the semi-comatose patient appears to be favourably influenced.

Cerebro-spinal Fever.

The outbreak of cerebro-spinal fever in several military training centres during the winter of 1914-15 created at once an urgent demand and a valuable opportunity for investigation of the outstanding problems of that disease. When the epidemic declined in the summer months Professor F. W. ANDREWES, Professor W. BULLOCK, and Professor R. T. HEWLETT were invited by the Medical Research Committee to form an advisory committee for the purpose of sifting and summarising the experience gained in the scattered bacteriological stations. The report drawn up is one of exceptional interest and value. It concerns itself chiefly with bacteriological and epidemiological questions. The authors insist that there is no need to look beyond the meningococcus (*Diplococcus intracellularis meningitidis*) for the essential cause of the disease; nor any warrant from facts for seeking to invoke the obscure phenomena of "pleomorphism" in explanation of the anomalous features. Further, their work goes to show that the conception of the meningococcus as a bacterial species

of which all the members are identical, must give place to the recognition of a meningococcus group, including several types of races, just as has been shown in connexion with the Gärtner group of bacilli, and more recently in connexion with the pneumococcus. An interesting feature of the report is the new point of view which the committee takes up, tentatively as yet, with regard to the origin of carriers. Hitherto the carrier condition has usually been attributed to contact with a victim of cerebro-spinal fever, but now it is suggested as probable that a large proportion of the carriers found in any group of contacts "were not infected from the case of cerebro-spinal fever, but represented the proportion of carriers already present amongst the population where the case had arisen." From observations made on carriers it was concluded that the causal organism is not easily dislodged from the naso-pharynx, and that carriers would be little liable to convey infection if they always took the precaution of coughing and sneezing into some handkerchief or piece of rag which could be burned. The danger of transfer by saliva is probably slight, as the streptococci which abound in that secretion are strongly inimical to the meningococcus, while the microbe is also very intolerant of drying.

Beri-beri.

Lieutenant-Colonel W. H. WILLCOX contributed an interesting article to our columns on beri-beri based upon the careful study of over 50 cases seen during the latter half of the past year in the Mediterranean area. It is generally recognised that diet plays a very important part in the causation of the disease, but in many of the cases, in addition to the factor of diet, there was evidently some toxic influence at work, such as a previous attack of dysentery, chronic diarrhoea, paratyphoid, purpura, or jaundice. In the Dardanelles series the presence of a toxic factor derived from such diseases necessitated a special diet, which, though suitable to the diseases in question, was almost devoid of anti-beri-beri vitamins, and so "an additional dietetic factor was added to a borderline case, thus causing the development of beri-beri."

Shell Shock.

Much has been written and various discussions have taken place during the year on the condition known as shell shock. Ever since the term has been introduced there has been a tendency to consider that the cases might be divisible into two classes. One class has been assumed to include various exaggerations of pre-existing forms of mental deficiency, the second has been held to be akin to hysterical manifestations. The number of cases now investigated appears to afford conclusive evidence that the subject of shell shock is not likely to be disposed of on either hypothesis. The Lettsomian lectures by Major F. W. MOTT on the Effects of High Explosives upon the Central Nervous System, and the papers which we have published by Lieutenant-Colonel CHARLES S. MYERS upon the Study of Shell Shock, refer to many of the latest phases of scientific investigation and speculation concerning the subject. The terrible experiences through which many of the sufferers have passed are well known, and Colonel MYERS attaches great importance to the influence of past history, while Major MOTT emphasises the harmful results likely to arise from the repetition of the incidences in the form of dreams. The latter observer considers that the symptoms of headache, weariness, loss of power of concentration, irresolution, and mental fatigue constitute a neurasthenic condition frequently found as a result of shell shock, and he explains the condition as the acquirement of the habit of drawing on the reserve of neuro-potential; the patient is unable, through insomnia or sleep disturbed by terrifying dreams, worry, and anxiety, to regain the balance and return to the normal conditions of automatic renewal of nervous energy as fast as formerly. Major MOTT endeavours to trace some definite structural or pathological change in the central nervous system. He assumes that though there may be no evidence to show that the living matter is altered, the symptoms point to a physical or chemical change and a break in the links of the chains of neurons which subserve a particular function. He also attaches importance to physical trauma, concussion, or "commotio cerebri," and he appears to allow for some chemical changes due to poisoning with CO and for the resulting deoxygenation of the blood.

At a discussion on Shell Shock at the Royal Society of Medicine many opinions were expressed as to the origin,

symptoms, and treatment of this condition. Amongst others Dr. HENRY HEAD gave his view, which was that "shell shock" was a heterogeneous collection of different nervous affections from concussion to sheer funk, which have merely this much in common, that nervous control has at last given way. Dr. E. G. FEARNSIDES, in relating his experiences, drew attention to the mode of onset. The cases in which the symptoms appeared slowly were among the older non-commissioned officers, in whom a breakdown occurred after a prolonged period of stress when adequate sleep had been for a long time unobtainable, whilst in cases of sudden onset the average age of the men had been found to be distinctly lower. The relation to epilepsy was also discussed, for instances have been recorded in which the shock of a high-explosive shell has been found to be the starting-point of true epilepsy in men who had not previously suffered from it. Captain E. F. BUZZARD'S paper, entitled "Warfare on the Brain," which is published in our columns this week, discusses the subjects of shell shock and traumatic epilepsy very interestingly.

Dr. H. WILTSHIRE, after considerable experience at No. 12 General Hospital, is of opinion that gradual psychic exhaustion from continued fear is an important disposing cause of shell shock, particularly in men of neuropathic predisposition. In such subjects it may suffice to cause shell shock *per se*. In the vast majority of cases of shell shock he believes the exciting cause to be some special psychic shock. Horrible sights are, in his view, the most frequent and potent factor in the production of the shock; losses and the fright of being buried are also important in this respect.

Trench Nephritis.

The large number of men returning from the front suffering from nephritis has naturally given rise to much speculation. Captain W. LANGDON BROWN opened a discussion on the subject at the Royal Society of Medicine. He maintains that the cases are true examples of acute nephritis, as shown by (a) the combination of oedema with albuminous urine containing casts; (b) the nature of the proteins in the urine; (c) the tests for renal permeability; and (d) post-mortem evidence. The cases had been too prevalent to be merely accidental, and the close similarity of the symptoms pointed to a common cause. The curve of incidence suggested an infective agent, as did also the unequal degree to which the different units were affected. So far, bacteria had not been found responsible for the infection. He considered that there was a specific organism responsible which resembled, but was not identical with, that causing scarlet fever. In the discussion which followed Professor F. W. ANDREWS stated that there was nothing histologically to distinguish trench nephritis from other forms of acute and subacute nephritis. The acute glomerular nephritis of scarlet fever was comparable in all respects with trench nephritis. He had failed to find any micro-organisms in the urine or kidneys.

Cardiac Disabilities.

In opening a discussion on the "Soldier's Heart" Sir JAMES MACKENZIE defined this condition as characterised by exhaustion of the circulatory system, shown by breathlessness, a sense of suffocative and præcordial discomfort, and a frequency which if not raised during rest becomes unduly increased on slight exertion. But the symptoms are not confined to the circulatory system, and in 90 per cent. at least of the cases observed this system is not the one primarily affected; the circulatory symptoms are part of a general illness in which the central nervous system has a large share. Apart from the vaso-motor disturbances, there is an irritability of temper, a depression of spirits, an inability to concentrate thought, a nervous tension liable to lead to sudden outburst and a tendency to focus the attention constantly on the condition of the heart, which imply a profound influence on the nervous tissues. In regard to treatment, it is important to note Sir JAMES MACKENZIE'S opinions. Where the condition is one of simple "soldier's heart," absolute rest is not indicated; rest in bed may tend merely to further weaken the cardiac muscle. He maintains that appropriate and not excessive exercise is the right treatment both for the heart and the depression of spirits. Captain J. PARKINSON, as the result of an inquiry into the various conditions which lead men on active service to report sick with symptoms suggesting heart disease, points out that among soldiers in training and on active service are a number

who complain of cardiac symptoms on exertion but show none of the physical signs indicative of heart disease. These men, he states, are the subjects of a cardiac disability which is unmasked by the exertion required of a soldier. It is not a specific variety of heart disease, and needs no such name as "soldier's heart." In about half the cases in his series the disability had been present to some extent in civil life, and was therefore not the result of military service. Captain PARKINSON finally expresses the opinion that the absence of abnormal physical signs in the heart of a soldier should not prevent his discharge from the Army if, under training or on active service, he shows breathlessness and precordial pain whenever he undergoes exertion well borne by his fellows.

SURGERY.

In surgery more than in any other department of medicine the war has overshadowed everything else. The few meetings of the medical societies which have dealt with surgical subjects have had reference to the war only.

Treatment of Wounds.

The foremost of the questions, discussed over and over again, has been that of the best method of treatment of the wounds received in war, and in this war these are almost all gunshot wounds, for of wounds of the *arme blanche* there have been very few indeed. The young surgeon must find himself very bewildered as to the choice he should make for the treatment of gunshot wounds, though it might well be thought that after two and a half years of war surgeons would have come to some sort of an agreement as to the best method to employ. But it is not so at all. The variety of treatment is great, and equally good results are claimed from each technique. The method that is the most widely known and received is that introduced by Colonel Sir ALMROTH WRIGHT. He irrigates and dresses the wound with a hypertonic solution of common salt; at first the liquid contained also some sodium citrate, but that has now been found to be unnecessary, and its inclusion needlessly complicates the preparation of the solution. This hypertonic solution has several actions, but its main function is to stimulate the effusion of lymph from the vessels of the walls of the wound. This effused lymph possesses important antiseptic powers and the lymph also contains leucocytes possessing phagocytic properties. It is clear that the method has been founded on careful laboratory experiments, and the truth of the foundations on which the method is based is shown by the success of it in practice.

Probably the next most popular application to wounds is a solution containing hypochlorite. One of these is eusol, and another is "Dakin's solution." Both of these have been employed very largely, and of Dakin's solution it has been said that it possesses 30 times the antiseptic power of carbolic acid, while at the same time it has little harmful effect on the tissues. CARREL has introduced a special method of using a slightly modified Dakin's solution, and he claims that if the details of his method are followed a septic wound can be rendered sterile in about a week. A still stronger chlorine compound has been introduced by DAKIN, it is called "chloramine," or "tolamine"; it is said to be five times stronger than DAKIN's original solution. The use of iodine in wounds seems to be completely discredited, and it appears to be now very little employed. Mr. A. E. MORISON introduced the use of magnesium sulphate and glycerine, and those who have seen its action have expressed themselves as very satisfied with the results obtained. Captain W. B. DAVY has found much benefit from the use of salt tablets wrapped in gauze, packed into the wound, and when the salt dissolves the salt acts as a drain. Major A. J. HULL has introduced the use of "salt sacs" in the treatment of gunshot wounds. A two-walled sac is made of bandage, between the walls of which four layers of gauze are placed, the interior is filled with salt, and the mouth of the sac is sewed up. One or more of these sacs are used to fill the wound, any spaces between being occupied with gauze. The drainage is said to be perfect, every portion of the wound being drained by the osmotic action of the salt. The dressing does not, as a rule, need changing for a week or so, and the results are said to be excellent.

Dr. LOUISA GARRETT ANDERSON, Dr. HELEN CHAMBERS, and Miss LACEY have conducted at the Endell-street Military Hospital an investigation into the relative value of

various methods of dealing with septic wounds, and amongst other results they have found that a solution of salicylic acid, about two drachms of a saturated alcoholic solution to a pint of water, forms a very effective lotion to a septic wound, for the crystals of the salicylic acid become deposited in all parts of the wound, and a diminution in the number of bacteria on the surface of the wound occurs. They have also found a mixture of salicylic acid and gelatin very useful; the mixture, with the gelatin liquefied by heat, is poured into the wound and fills the recesses accurately. Major T. F. BROWN has obtained very satisfactory results with picric acid; it is known to be a very efficient antiseptic, and as it also possesses marked anodyne properties, and as it stimulates the growth of granulation, its employment is likely to be extensively useful; the main argument against it appears to be that at the present time picric acid is being so widely employed in the infliction of wounds that the Munitions Department might raise objections to its employment in their cure. Major GEORGE STOKER has experimented with the application of ozone in the treatment of septic wounds, and he has found it very useful. At first there is an increase in the amount of pus formed, but it soon diminishes in amount, and before long the discharge becomes serous in character.

It will have been seen that there is a very large number of applications from which the surgeon can choose; we have no doubt that good results can be obtained from any of them and from many other dressings which we have not mentioned, but in practice the exigencies of time and space go far to limit the number of methods which are really available.

Captain R. H. JOCELYN SWAN and Mr. KENNETH GOADBY have met with no small measure of success in the treatment of septic wounds by means of vaccines, and, in fact, Captain SWAN now makes it a rule that every case arriving from overseas with a septic wound shall, on entrance into the hospital, have an initial dose of a mixed polyvalent vaccine of proteus and streptococcus. He is satisfied that this treatment has to a large extent assisted the other methods of treatment employed. It tends especially to prevent secondary hæmorrhage. In order to control the results he had other wards in which no vaccines were employed, and it was in those cases not treated with vaccine that secondary hæmorrhage occurred. He points out that it is unreasonable to expect that a vaccine should cure a septic wound if unaided by the ordinary surgical measures such as drainage.

Head Injuries.

The proportion of head injuries is not so great now as it was at an earlier stage of the war, and this is, in part at all events, due to the fact that the steel helmets have gone far to reduce the number of cases. A bullet travelling at high speed can easily penetrate the helmet, but it arrests low-speed bullets, and it is specially useful in stopping shell fragments. Major ALEXANDER DON has described his experience with head cases at a casualty clearing station, and he comes to the opinion that the linear or angled scalp incision, as practised by most French surgeons, with a small trephine opening, is more useful than the large scalp flap as practised for the most part by the British surgeons, for the results, as he has seen them, are better. Captain H. F. WOOLFENDEN has described two cases in which during the operation for the removal of a foreign body from the brain he opened the lateral ventricle, and yet the patients recovered, the sepsis present being but slight.

Captain H. ELWIN HARRIS has reported an interesting case in a man who, while being dressed for a wound in the hip, was struck by another bullet which made him unconscious. No bullet wound was found, but from a consideration of the circumstances and the examination of the skiagram, it is clear that the bullet entered at the left inner canthus, passed between the eyeball and the inner wall of the orbit, and that it then entered the sphenoidal sinus, after wounding the optic and the third nerve. By the expenditure of a large amount of trouble Captain HARRIS at length succeeded in withdrawing the bullet through the left nostril. The patient recovered rapidly.

Sir WILLIAM J. COLLINS has described a case in which very extensive destruction of the right side of the face from the ear to the nose had occurred. Seven operations were performed before the patient came to England, and two further plastic operations were performed; and then an artificial

cheek was designed of painted and moulded copper-plate with an eye attached and carrying a pair of spectacles, with a very satisfactory cosmetic result, as shown by a photograph published in these columns.

Some Curious Cases of Shot Wound.

Many remarkable cases showing the result of treatment of shot wound have been recorded in medical literature, and space only allows us to refer to two examples.

A gunshot wound of the inferior vena cava is almost certainly fatal, but Captain D. O. TAYLOR has recorded a case in which a fragment of a bomb entered above and to the right of the umbilicus. When the abdomen was opened, two large tears in the jejunum were found; both of these were sutured, and then a retroperitoneal hæmatoma was seen, and when the posterior peritoneum was slit up with scissors there was furious bleeding from a longitudinal tear in the vena cava three-quarters of an inch long. The hole in the vein was closed by means of six pairs of artery forceps which were left on and were not removed until the fourth day. The patient recovered.

Mr. L. E. BARRINGTON-WARD was able to remove a bullet which had made its way into the middle mediastinum. The man had been wounded, and about five months later he rejoined his regiment for further service, but he had pains in the chest with shortness of breath on marching. The skiagram showed a bullet apparently lying in the pericardium. At the operation the pericardium was opened anteriorly and the bullet was looked for but not found. The lung and pleura were gently separated from the pericardium and then at a depth of 4 inches the bullet was found, with a few drops of pus. The bullet was removed and the patient had an uneventful recovery.

Celluloid in Plastic Surgery.

In much of the plastic surgery needed in the treatment of extensive injuries the surgeon often finds great difficulty in filling up spaces where the tissues have been extensively lost. Mr. C. HIGGINS has used celluloid plates with very good effect, though great care had to be taken that the piece of celluloid did not press upon the line of the suture, or it was liable to prevent healing. Later, however, he found that a solution of celluloid was even more useful; it is injected gently with a syringe having a screw piston. These injections have done so well that he has given up the use of the plates.

Left-sided Appendicitis.

It is well known that the pain of an appendicitis may be felt not in the right iliac fossa but on the left side of the body, and whatever the explanation of this may be, the appendix is situated on the right side. There is, however, a much rarer condition, in which by a transposition of viscera the cæcum is on the left side of the body, and when in such a case an appendicitis occurs, the signs and symptoms may be found on either side. Dr. GRAHAM W. CHRISTIE has described a case in which there was a left-sided appendicitis, though the pain was on the right side; but in another case under Dr. C. E. CORLETT, when the abdomen had been opened, no cæcum could be found on the right side, and on further examination it was discovered that there was an absence of the transverse colon, and the ascending colon was in contact with the descending colon. Such cases as these are very disconcerting when encountered at an operation.

Abdominal Operations on Children.

As a rule very small children do not stand abdominal operations well, especially those which are in any way prolonged. Surgeon C. P. G. WAKELEY has put on record a very striking case in which the stomach of an infant only six months old was opened to remove a brooch which had been swallowed two days before. By means of a skiagram it was seen that the brooch was in the lower third of the œsophagus, with the pin pointing towards the mouth. An attempt was made to close the brooch by the use of the bronchoscope, but the only result was to push the brooch into the stomach, from which it was removed through an abdominal incision. The pin of the brooch had passed through the anterior wall of the stomach, and so a slight and local peritonitis had arisen. The wound healed well and the child recovered completely. Dr. IDA M. GUILLAUME has related the particulars of a case in which a child only 15 days old had had a strangulated hernia for

four days, when Captain J. W. WALKER operated, although the child appeared almost moribund. A strangulated left inguinal hernia was found and released. Gangrene of the testis had occurred from pressure, but complete recovery followed.

Dr. F. M. NEILD operated on a boy 10 years old for perforation of the bowel from typhoid ulceration about eight hours after perforation had taken place. The child did well for nine days after the operation; then acute intestinal obstruction took place, and when the old wound was reopened it was seen that the obstruction was due to pressure from a band of omentum. The obstruction was removed and the patient recovered. Mr. W. H. BATTLE has pointed out how difficult it is sometimes to recognise a rupture of the bowel, for the signs and symptoms may be extremely obscure, so that unless the surgeon is waiting for the symptoms to manifest themselves the opportunity to operate may pass by. He expresses his agreement with the teaching of the late Mr. BERNARD PITTS that exploration should always be done when there is a clear history of an abdominal injury, such as a kick from a horse.

Removal of Foreign Bodies from (Esophagus and Bronchi.

The removal of foreign bodies from the œsophagus and bronchi has been much facilitated by the introduction of the direct method, and Mr. IRWIN MOORE has described a number of instruments and processes aiding their removal; especially he has devised some non-slipping forceps of proved utility. He has also designed endoscopic shears, which can cut through tooth-plates.

OBSTETRICS AND GYNÆCOLOGY.

Twilight Sleep.

A subject which has excited a good deal of interest of late, more especially in the lay press, is that of anaesthesia during delivery, and particularly that variety of it called "twilight sleep." The subject was considered in a leading article in THE LANCET of Sept. 30th. This is a variety of morphine-scopolamine narcosis, and was strongly recommended by GAUSS in 1906 when he published his experiences of it in 600 cases. The steady fall in the birth-rate is beginning to cause general alarm, and it has been suggested if women could be assured that the pains of childbirth could be relieved to a marked degree that they would be less reluctant to bear children. Since its original introduction the method has been tried in a large number of clinics in this country, on the continent, and in the United States. On the whole, it has not met with complete approval. The chief objection raised to its use is its alleged tendency to produce frequent asphyxia and death of the child, and prolonged labour with the danger of post-partum hæmorrhage on the part of the mother. Many obstetricians, too, have been disappointed with the results as regards the amnesia it is designed to produce. The method depends for its action on the fact that scopolamine tends to cause loss of memory. The woman perceives the pains at the time to a greater or less degree but completely forgets them, and on waking up half an hour or so after the birth of the child is totally oblivious of the fact that she has had any pains. If success is desired it is necessary to observe very carefully the special technique laid down by the introducers. The first injection must be given when the pains are recurring every three to five minutes and are lasting, as measured by the watch, from 30 to 45 seconds. If the injection is given before this stage is reached it will be too soon and uterine inertia is likely to supervene, and if it is given after this stage it is very difficult to secure the desired degree of amnesia. The second dose, of scopolamine only, should be given three-quarters of an hour after the first injection of scopolamine and morphia. The morphia in an ordinary case should not be repeated. Half an hour after the second dose has been administered the patient's memory should be tested, and a third dose, if necessary, given one to one and a half hours after the second dose. It is not advisable to give more than four doses of scopolamine, although in exceptional cases it may be necessary. The uterine contractions, the maternal and foetal heart sounds, must be carefully watched, and the patient should be under the constant supervision of a medical man and should not be left to the care of a nurse. The dose given must be carefully determined by the memory test

and the minimal quantity necessary should always be administered. Even in cases where the amnesia up to that time is complete it is often necessary to give a little chloroform or ether as the head is passing over the perineum. If suitable cases are selected, if minimal doses are used, and if the condition of the mother and child is carefully supervised, the danger of foetal asphyxia or post-partum hæmorrhage can be reduced to a minimum. A method of this kind which requires the constant supervision of the patient by a medical man, if all risks are to be eliminated, is obviously only available for a small number of patients. If it is to be used on a large scale without proper and continuous supervision, as appears to be the intention of those who at the present time are trying to make its use more generally available, disaster will certainly follow. Scopolamine is a drug which is difficult to standardise, and every now and then a patient will be found to exhibit a marked idiosyncrasy to its action. The whole matter is one which would bear further investigation, and those who propose to employ this method in large numbers of lying-in cases should be well aware of the special dangers which attend it and the necessity for a strict observance of the proper technique for its administration.

Maternal and Child-Welfare Centres.

A large number of maternity and child-welfare centres have been started in different parts of the country and a great deal of very good work is being carried out in them. This work can, however, only be carried on properly when full use is made of the information furnished by the Notification of Births (Extension) Act, 1915. The important subject of maternal mortality and its relation to infant mortality was fully considered in a supplement to the Forty-fourth Annual Report of the Local Government Board by the medical officer of the Board. As he points out, had the birth-rate been the same in 1914 as it was in 1876, 467,837 additional infants would have been born in the former year. These figures illustrate the immense importance of measures directed to saving the lives and maintaining and improving the standard of health of the mothers and their children.

The figures quoted show, further, that the death-rate, from conditions other than puerperal fever, adversely affecting child-bearing, is much lower in London than in the provinces. This means that no less than 800 women die each year in England and Wales whose lives would be saved if the experience of the rest of England were as favourable as that of London. If puerperal fever were to be eliminated, as it practically has been from lying-in hospitals, a further saving of some 1100 lives would be secured annually in England and Wales.

The majority of the deaths of mothers from child-bearing are caused by puerperal fever, hæmorrhage, and convulsions. Most of these conditions are due essentially to preventable causes. The report further shows that an excessive mortality of mothers means also an excessive proportion of still-born infants and an excessive proportion of deaths of infants in the early weeks after live birth. To remedy these conditions it is very necessary that skilled assistance should be available at maternity centres. The notification of births and of puerperal fever requires to be made more effective, and there is a need for the provision of pathological aids for diagnosis.

The great importance of ante-natal work both for the mothers and their unborn children was emphasised at a discussion held on the "Need for Greater Care of the Woman during Pregnancy and Childbirth" at the Obstetrical Section of the Royal Society of Medicine at the November meeting. The discussion was opened by Dr. S. G. MOORE, of Huddersfield. The very great importance of the adequate supervision of the pregnant woman was insisted upon by all those who took part in the debate, and the question of the notification of pregnancy as an aid in this direction was mooted but did not meet with much encouragement. It is difficult to see how the notification of pregnancy ever can be made compulsory; but unless pregnant women can be persuaded voluntarily to give notice of their condition to medical men, the complete utilisation of the preventive measures available for the reduction of the maternal mortality in child-bed seems impossible. The most important factor in the whole scheme of maternity centres and child-welfare centres is the home visitor. If the right class of

women are obtained for these appointments, they will be able to bring a very powerful personal influence to bear upon pregnant women to persuade them in all cases, whenever necessary, to seek medical advice for any of the disorders of their condition. If it were only possible for every pregnant woman to be under the care of a medical man during the term of her pregnancy, not only could the maternal mortality in child-bed at once be lowered, but a lowering of the early infant mortality would inevitably follow. The subject is one which calls for careful study and consideration at the hands of all medical men and women, particularly at the present time, when the lives of mothers and of their children are so important.

OPHTHALMOLOGY.

There is little to record of progress in ophthalmology except in connexion with the problems associated with the war. The injuries met with are of all degrees of severity. In the worst cases the eye is irretrievably damaged and there is much destruction of lids and neighbouring parts. These injuries leave scope for much ingenuity in plastic operations. Often the lids are so much damaged that the best procedure is to remove the conjunctiva and cover the whole surface with skin. The wounds are often septic, and excision of the eye in these cases is accompanied with risk of meningitis. The surgeons at the front are therefore often eviscerating these eyes, leaving a collar of sclerotic around the optic nerve. These cases usually require further operation subsequently, as the cup of sclerotic becomes filled with granulation tissue which keeps up a continuous discharge. Moreover, the sclerotic is badly supplied with blood-vessels and necroses; hence it is necessary to dissect it out. Wounded lids and sockets often have dense bands which prevent the wearing of an artificial eye. Contracted sockets have always been very difficult to deal with, but we may hope for some improvement in methods as the result of so extensive an experience.

During the war injuries to the eyes have resulted in an extraordinary variety of lesions in the fundus oculi. Hæmorrhages, ruptured choroids, retinitis proliferans, pigmentation, and so on, are very common, and present many interesting features. There is a wealth of material for painstaking investigation and record, but, unfortunately, no one has leisure for such peaceful pursuits.

Intraocular Foreign Bodies.

In every war-wounded eye there is the possibility of the presence of an intraocular foreign body. One of the base hospitals in France has a giant magnet, and all the cases passing through this hospital are put up to the magnet as a routine measure. Unfortunately, many of the foreign bodies are non-magnetic. It is therefore necessary in almost every case of wounded eye to have skiagrams taken, and extremely accurate localisation is necessary. This can only be effected by special apparatus, which has not always been available. For this and many other reasons it would be better if there were more concentration of the eye cases, and there is evidence that the authorities are adopting this view. During the past year the subject of foreign bodies in the eye has been discussed at the annual congress of the Ophthalmological Society of the United Kingdom, and the war aspects were duly borne in mind. Where one eye only is injured the surgeon's chief anxiety is often the danger of sympathetic ophthalmitis in the other eye. The treatment, however, is based on exactly the same principles as in civil practice, and it is a gratifying sign of efficient supervision that few, if any, cases of sympathetic ophthalmitis have yet occurred.

Nervous Affections.

Apart from actual lesions of the eyes themselves the nervous affections of the visual apparatus have attracted most attention. The amblyopia associated so frequently with so-called "shell shock" has been discussed by ophthalmologists, neurologists, and psychologists. It may be recalled that the Russo-Japanese War gave rise to many cases of wound of the occipital lobes of the brain, and that these formed the subject of an admirable monograph by a Japanese author. Similar cases have been studied in this war by GORDON HOLMES and W. T. LISTER, more especially with reference to the cortical representation of the macula. Their paper before the Section of Ophthalmology of the

Royal Society of Medicine may be profitably read in conjunction with an exhaustive pathological research by J. SHAW BOLTON and WILLIAM ROBINSON in a recent number of *Brain*. Still more recently a very striking clinical investigation of similar cases by Captain RIDDOCK has been discussed at the Section of Neurology, the interesting point being that appreciation of movement may persist in the otherwise hemianopic field.

The general mass of ophthalmic literature has been much reduced owing to the war. It has already been announced in THE LANCET that the three British journals—the *Royal London Ophthalmic Hospital Reports*, the *Ophthalmic Review*, and the *Ophthalmoscope*—are to be merged in a single representative journal to be called the *British Journal of Ophthalmology*, the first number of which will appear in January next.

NEUROLOGY.

The neurologist may be forgiven if he finds legitimate cause for satisfaction in the impetus which the war has given to the study of neurology, and the old-time neglect of it seems the more inexplicable. So large is the output of articles dealing with the neurology of the war that any attempt at summarisation must appear almost hopeless. To keep abreast of these contributions is an arduous task, while, unfortunately, many of them do not lend themselves to easy abstracting. The following paragraphs, therefore, form rather a guide to some papers and books than any discussion of their contents, and no attempt is made to allude to numerous valuable contributions to English literature, as these must, in many cases, have already come under the notice of our readers.

Lesions of the Peripheral Nerves.

In "Les Blessures des Nerfs," by Dr. J. TINEL, in charge of one of the French military neurological centres, a book of some 300 pages and an equal number of illustrations published by Masson et Cie, will be found an admirable compendium on the subject of injuries to the peripheral nerves. Its clinical side leaves nothing to be desired. Every aspect of such lesions, every factor bearing on exact diagnosis and on the desirability or otherwise of surgical interference is discussed with the lucidity of experience. Nothing has been more striking in war neurology than the overwhelming number of cases of peripheral nerve injury, and in this volume their classification and differentiation are dealt with in a highly practical way. Dr. G. DENY, of the Salpêtrière, contributes a general review of the subject to *L'Encéphale* for December, 1915. In this paper the different syndromes of interruption, compression, and irritation respectively are fully described and explained. The writer gives no fewer than 40 references to articles on peripheral nerve lesions in war (all French). In the issues of the *Revue Neurologique* for the first six months of 1916 there are some 30 original communications on peripheral nerve injuries, and at least as many more abstracts of similar papers from other journals. Reference may be allowed to two papers merely, one by MEIGE and BENISTY in the *Presse Médicale* for April 6th, 1916, and the other by LERICHE in the same journal for April 20th, 1916. The first of these contains a valuable study of the little understood vaso-motor, trophic, caloric, secretory, and painful phenomena often accompanying peripheral nerve lesions. The writers show the importance of the implication of vascular and sympathetic nervous system tissues in this connexion. LERICHE deals with the treatment of causalgia in certain cases, and attributes it to involvement of periarterial nervous plexuses. For treatment he suggests stripping periarterial cellular sheaths for some 8 or 10 centimetres at the level of the lesion.

Lesions of the Spinal Cord.

At the Medical Society of London the subject of spinal cord lesions was fully discussed.¹ Captain JAMES COLLIER introduced the discussion with a valuable paper, in which he described: (1) Direct lesions; (2) indirect lesions from indriving of bone, impact, and concussion; (3) secondary lesions from hæmorrhage and œdema; and (4) remote lesions, due to sudden raising of intraspinal pressure caused by passage of missile or by general concussion effect. CLAUDE

and PORAK² have made a useful contribution to the study of gunshot wounds of the cauda equina. They distinguish three groups of cases: (1) Prolonged paralysis of both lower extremities; (2) flaccid paraplegia of both legs, with subsequent unilateral improvement; and (3) unilateral paralysis from the commencement. They remark that on the whole the prognosis is not unfavourable, and that sometimes a striking degree of improvement may take place even in cases that have appeared hopeless. A considerable number of papers have been devoted to a consideration of spinal cord reflexes after complete and incomplete lesions, and to the important question of "spinal automatisms" (WEISENBURG, JARKOWSKI, ASTWAZATUROF, GUILLAIN and BARRÉ, MARIE and FOIX).

Lesions of the Brain.

At a joint meeting of the Société Nationale de Chirurgie and the Société Neurologique of Paris (May, 1916) a very long and detailed discussion took place on the whole question of intracranial injuries of war. The topics of surgical interference, secondary conditions, such as hernia cerebri, abscess, meningitis, and epilepsy, the duration of the symptoms, and cranioplasty, even the question of the removal of such cases from the field and the value of the helmet, were discussed in all their bearings. The reader is referred to the *Revue Neurologique* of June, 1916, for the record of the proceedings. At a previous meeting of the Société de Neurologie an illuminating debate on the general procedure to adopt in cerebral injuries took place. Reference must also be made to the paper by M. BABINSKI on the exact nature of so-called functional disturbances from gunshot wounds, shock, emotion, &c. This is a paper of peculiar interest and value to the neurologist.³

Neuroses.

This year's Lettsomian lectures⁴ were delivered by Major F. W. MOTT and devoted to a consideration of the effects of high explosives upon the central nervous system. They deserve careful study by all interested in the subject. Major R. G. ROWS has written on the mental conditions following strain and nerve shock. Two Thèses de Paris have been devoted to the same topic (VACHET, BOUCHEROT). In the Italian *Rivista di Patologia* (1916) is an important paper by BUSCAINO and COPPOLA on mental disturbances in war time. It is based on a study of cases among soldiers, civilians, refugees, and hostages, and it contains a review of the literature and a lengthy bibliography.

ELECTROTHERAPEUTICS AND RADIOLOGY.

One of the most important and valuable measures adopted during the present war is the establishment of orthopaedic hospitals and convalescent camps, where the after-effects of the injuries and diseases inherent to warfare are dealt with and the work of the ordinary hospitals completed. The carrying out of the scheme has involved the employment of electrical methods of treatment to an extent hitherto unknown, and with results that must afford the utmost satisfaction to those interested. Stiff joints, injured nerves, and paralysed muscles are now dealt with in the most thorough manner and under expert medical direction. Ordinary continuous and interrupted currents, diathermy, ionisation, static electricity are employed, either alone or more commonly in association with radiant heat, massage, or the more modern *eau courante* or whirlpool bath. This latter device seems to have some good properties, but it is too soon to estimate its value with any accuracy. Owing to the precautions taken cases of "trench foot" are not nearly so common as in the early months of the war, but a certain number are unavoidable, and for the stagnant state of the circulation left by this and kindred conditions the local application of high-frequency currents is favoured by some, while others pin their faith to static electricity, which appears to be growing in favour. It cannot be said that the past year has evolved anything that is a radical departure from known methods, but owing to the extensive employment of electricity and the large numbers of keen workers engaged there has been a great improvement in methods of application and technique as a visit to any one of these institutions will amply demonstrate.

² *L'Encéphale*, December, 1915.

³ *Revue Neurologique*, April-May, 1916.

⁴ THE LANCET, 1916, I., 331, 441, 545.

¹ THE LANCET, 1916, I., 677.

Radiology.

In the field of radiology also there is nothing very new to report. There has been a great drop in the number of new methods brought forward for the localisation of foreign bodies, and workers have usually settled down to their favourite scheme, the simple one of triangulation finding the most favour. The therapeutic application of the X rays is steadily advancing, and with the use of "hard" tubes and thicker filters better results are being obtained. Indeed, where the two are equally usable, in cases of malignant disease at least, there is reason to believe that the X rays are superior to radium. A more uniform irradiation is made possible without any risk of a local and more or less intense reaction, such as often occurs around the site of the radium applicator. Tubes of the Coolidge type are a great help in administering the therapeutic doses now demanded.

The most recent development as regards the use of the ultra-violet rays is the employment of electrodes of practically pure metallic tungsten in the arc lamp. The resultant radiation is very rich in ultra-violet rays and both regular and uniform. This is a great improvement on the lamps using electrodes of wolframite. Moreover, it appears that any simple form of arc lamp can be employed with excellent results; but, of course, precautions must be taken to shield the operator and patient against undesired exposure, as an "erythema dose" is very quickly produced by this rich fountain of ultra-violet radiation.

TROPICAL AND EXOTIC DISEASES.

As was the case last year, the investigation of the problems connected with tropical medicine and exotic diseases has suffered somewhat by the absence of many of our experts on active service. But notwithstanding this, progress continues to be made in many directions. A valuable and timely contribution to our general fund of knowledge was published in THE LANCET by Dr. F. G. CLEMON, formerly British Delegate on the Constantinople International Board of Health. This series of articles described the Shiah Pilgrimage and the Sanitary Defences of Mesopotamia and the Turco-Persian Frontier, a subject of importance at the present moment, when plague, cholera, and other diseases are threatening in that region.

Dysentery.

Dysentery and other protozoal infections of the intestines have demanded a share of attention during the year owing to the invaliding and mortality which they have caused among our troops, especially among those in the Near East and Mesopotamia. Many papers on the subject have been published, and among these we may mention, in addition to those already noted (1) *Intestinal Disorders Arising from Protozoal Infections*, by Captain B. R. G. RUSSELL, R.A.M.C.; (2) *Lambia Intestinalis Infections from Gallipoli*, by Lieutenant A. M. KENNEDY, R.A.M.C., and Lieutenant D. D. ROSEWARNE, R.A.M.C.; (3) *The Nature and Distribution of the Parasites observed in the Stools of 1305 Dysenteric Patients*, by Dr. H. B. FANTHAM; and (4) *An Enumerative Study of the Cysts of Giardia (Lambia) Intestinalis in Human Faeces*, by Dr. ANNIE PORTER.

Kala-azar.

Sir LEONARD ROGERS, I.M.S., to whose efforts we owe largely the adoption of the modern treatment of dysentery by emetine, as well as the successful treatment of cholera by the hypertonic and permanganate method, has recently directed his untiring energies to the treatment of kala-azar, "the black death," a disease formerly regarded in India as inevitably fatal, and, in conjunction with Captain N. H. HUME, I.M.S., he has been treating such cases in hospital at Calcutta by intravenous injections of tartar emetic with gratifying success. Lieutenant-Colonel J. W. CORNWALL and Assistant Surgeon H. M. LA FRENAIS, I.M.S., have been studying experimentally the alleged association of the bug with the transmission of kala-azar to man. They have, however, found little to support this view so far, though further investigations are proceeding. Attention has recently been drawn by Captain GORDON R. WARD, R.A.M.C., to the possible danger of kala-azar being brought to this country from Malta by returning soldiers, and he quotes two instances of the disease in British soldiers who had never been further east than Malta.

Malaria.

Malaria, the most important of all tropical diseases, has been making its presence felt in some of the war-zones, causing mortality and invalidity among our Expeditionary Forces, particularly among the troops, both French and English, operating in the Valley of the Vardar, north of Salonica. In this unhealthy region many soldiers contracted malaria in spite of a daily prophylactic dose of 5 grains of quinine. The question of the value of quinine prophylaxis came lately under discussion at a meeting of the Society of Tropical Medicine and Hygiene, at which Dr. ANGUS MACDONALD, of Kingston, Jamaica, read a paper on the Position of Malaria in Sanitary Administration. In this he maintained that continuous drugging with quinine might prevent attacks of malaria in anopheline countries, but statistics were still lacking to demonstrate the extent to which the use of this drug prevents the occurrence of the disease. Surgeon-General Sir DAVID BRUCE at this meeting also expressed, from personal experience, some scepticism in regard to quinine as a prophylactic against malaria, adding that he wished that the matter could be "settled once for all by good evidence."

Ankylostomiasis.

The campaign against ankylostomiasis is still being successfully carried on in various parts of the world, including the West Indies and other British colonies, by the International Health Commission, an offshoot of the Rockefeller Foundation which supplies the money for the prosecution of this most useful campaign.

Trypanosomiasis.

Mr. G. D. MAYNARD, clinician and statistician to the South African Institute for Medical Research, has published a pamphlet on the trypanosomes of sleeping sickness, in which he freely criticised the views of the Sleeping Sickness Commission respecting the alleged identity of *T. brucei* with the other trypanosomes causing sleeping sickness in Nyasaland; he deprecated the wholesale destruction of big game in Africa, his opinion being that the human carrier is of much greater importance in the diffusion of sleeping sickness than wild animals.

Cholera in the Far East.

There are some indications that cholera is assuming more active characters in the Far East, and it is therefore possible that in the coming summer it may under suitable conditions, as in the past, sweep with a fresh virulence from east to west across Asia into Europe. During the autumn there was a considerable epidemic in Japan and Korea and in Indo-China, particularly in Annam and Tonkin, cholera was very prevalent during most of the year. The infection was conveyed in one instance from Annam to Colombo, 55 cases occurring in connexion with the vessel; it was conveyed to Suez in another ship chartered by the French Government for the transport of Annamese labourers from Saigon to France, *via* Marseilles, to work behind the trenches. In the case of this vessel altogether 136 cases occurred on board or at the quarantine station at Suez; the danger from it was regarded as so great that the vessel and its passengers were sent back to Saigon. The presence of cholera carriers was discovered on this ship among the passengers who were apparently in good health. Cholera was also present in the Dutch East Indies, especially in Java, during the year. In India, up to the end of July, about 184,000 deaths were recorded from cholera, Bengal and the Province of Bihar and Orissa being the chief sufferers. There were several outbreaks in Persia, Siam, and the Straits Settlements. In the Philippine Islands about 4000 persons were attacked by cholera during 1916.

Cholera in the Near East.

Cholera during the summer and autumn was widely epidemic in Turkey, and Constantinople, Smyrna, Samsun, Jaffa, Tripoli de Syria and Damascus were among the towns invaded by the disease. At the beginning of the year cholera appeared among the Serbian soldiers and refugees who had been disembarked at Corfu, and the Austrian prisoners brought by the Serbians to Albanian ports for conveyance to an island near Sardinia suffered considerably from the disease, as did also Serbian refugees landed at Marseilles; also those landed at Biserta, Tunis, and other North African ports. Recent reports mention the appearance of cholera in Rumania, at Galatz, Braila, and Toulcha (or Tuldja); also in some parts of Greece, including Moschopolis and Koritza in

Northern Epirus. Early in the year cholera was present in Austria, Hungary, Croatia, and Bosnia. In the Caucasus the disease was prevalent at Tiflis and other places during the autumn. A recent report mentions the appearance of cholera at the port of Jibutli, or Obok, in French Somaliland.

Yellow Fever.

The fourth and final report of the Yellow Fever (West Africa) Commission was issued last summer. It confirmed the opinion that this malady was endemic on the West Coast of Africa, and that probably the continuous presence of the disease was maintained by the existence of endemic foci rather than by its almost universal prevalence amongst the native population. There is no evidence that yellow fever has been brought to West Africa in recent years from any other country. Up to the present the nature of the virus remains unknown. In the third report the Commission finally rejected the claims advanced by Dr. H. SEIDELIN that the bodies discovered by him, and which he named the *Paraplasma flavigenum*, were the true parasites of yellow fever. Vigorous prosecution of anti-mosquito measures was strongly urged by the Commissioners.

Plague in Europe.

Some alarm was aroused in England towards the end of last autumn by the almost simultaneous appearance of cases of plague at three of our principal ports—namely, Liverpool, Bristol, and Hull, all of which hold a high reputation for the excellence of their sanitary administration. None of the groups of cases were landed from a ship, but all occurred among the population on shore. It was therefore a disturbing thought that if plague had found an entrance at three well-administered ports, it would be easy for it to find a footing in ports less well administered. Fortunately, the measures at once taken by the local authorities were successful, and some three months have now passed without any new case being reported. In this connexion the existence of so many foci of the disease abroad shows the amount of danger to which this country is exposed through its shipping and commerce. In Greece cases of plague occurred at Athens and the Piræus in January, and later in three islands—Syra, Chios, and Mitylene. In September plague was present at Volo, a port in Thessaly. It has been stated also that two cases of plague occurred at Salonica during the year.

Plague in Asia.

In India plague still continues its ravages; over 184,000 deaths from it were recorded up to October, the United Provinces and Bombay Presidency being at present the worst-affected areas. Ceylon has not yet got rid of the disease, for more than 240 cases were reported up to September at Colombo. In the Dutch East Indies the prevalence of plague also continues, and in Indo-China and Siam outbreaks have been observed during the year. Minor prevalences have also been recorded in the Straits Settlements, Japan, China, and the island of Formosa; also in Persia, at the port of Mohammerah, near the Turkish frontier.

Plague in Africa.

In Egypt some 1700 cases were notified up to the middle of November, and in Tripolitania an outbreak occurred among the Italian troops near the town of Tripoli. At Rabat, a port on the coast of Morocco, some cases were reported. In the Union of South Africa early in the year plague appeared in the Orange Free State in the districts of Hoopstadt and Winburg. Among the Europeans who fell victims to the disease was Dr. PAUL A. GILLESPIE, a medical practitioner of Winburg, who died on March 24th. In October another outbreak occurred in Cape Colony in the Uitenhage district, 25 miles north-west of Port Elizabeth, among the native population. In Uganda plague appeared in October at Kampula, and in the East Africa Protectorate at Nairobi, where 45 fatal cases resulted, two being Europeans. Plague has for some years been prevalent in Mauritius, but it now appears to be subsiding, for during the year only five cases came under official observation.

Plague in the Western Hemisphere.

Brazil had little reported plague during 1916, only a few cases being notified at the ports of Bahia and Pernambuco. In the Argentine plague was prevalent in the province of Cordoba early in the year, about 50 cases being observed; and in the autumn the disease reappeared at Villa Urquiza, not far from Buenos Aires; but to what extent was not

known, as the local authorities refused information. Plague was officially reported in Chili at Antofagasta, Tacna and Mejillones during the spring, and was stated in June to be spreading along the coast. The disease was reported about midsummer to be increasing in Peru, especially at the port of Païta, and at least seven departments of the Republic admitted a prevalence of plague within their borders. One of the chief foci of plague in South America is the Republic of Ecuador, the capital of which is Guayaquil, known among American skippers as "the pest-hole of the Pacific," where about 640 cases were reported up to October. Plague also occurred at other places in the interior of Ecuador. There were no human cases of plague notified in the United States during 1916, but infected rats continued to be discovered from time to time at the port of New Orleans. Some plague-infected ground-squirrels were also found in several counties in California from March up to July.

PUBLIC HEALTH.

Since the outbreak of war all branches of public health work have been carried on in circumstances of peculiar difficulty owing to the depletion of sanitary staffs occasioned by the large number of medical men, sanitary inspectors, and public health clerks, ordinarily employed by local sanitary authorities, who have gone on military service. The ever-increasing demand for medical men in the Army has made it far from easy to maintain an efficient public health service throughout the country during the year 1916. By combining appointments it has been possible to release from their civil duties a large number of medical officers of health, tuberculosis officers, and school medical officers for service in the Royal Army Medical Corps. In some instances a medical officer of health has undertaken duty in one or more districts in addition to his own; in others a county medical officer of health has consented to carry on district work during the absence of the local officer, while lady doctors and general practitioners have filled many gaps created by the exigencies of war. We learn from the Forty-fifth Annual Report of the Local Government Board that, at the time when the report was issued, about 250 medical men holding whole-time posts under local sanitary authorities were on service with His Majesty's forces, and probably the number has increased since then. It is, of course, the paramount duty of all persons in this grave national crisis to do what lies within their power to assist in winning the war, and an adequate supply of medical men for the Army is a matter of cardinal importance; local authorities and the public generally realise that the absence of so many highly trained sanitary officers from their civil duties is a serious matter, although the present depleted condition of the public health service has led to no serious increase in the incidence of infectious disease since the outbreak of war. The fact reflects credit on the national sanitary administration, but affords no certain guarantee that this state of affairs will continue.

Acute Infectious Diseases in the Civil Population.

In the spring of 1916 small outbreaks of small-pox occurred in South Wales, Lancashire, and in other parts of the country. Energetic measures were taken by local authorities to limit these outbreaks, and by the end of June the prevalence of the disease came practically to an end. During August and September plague appeared almost simultaneously at Liverpool, Bristol, and Hull, but the efficiency of the sanitary administration in these places prevented any general spread. We have referred to this incidence of plague in England in another column, as well as to the liability which now exists of importation of infectious diseases from the war zones in Europe and the Near East. The diseases most likely to be thus introduced are typhus fever and small-pox, but, fortunately, they have not so far given rise to trouble. A considerable number of our soldiers suffering from dysentery and from typhoid infections have from time to time been sent home for treatment in this country. The arrangements made by the military in co-operation with the civil authorities have, however, been successful in preventing any serious spread of these maladies to the home population. The extensive prevalence of cholera in Turkey and the Near East gives rise to risk of its introduction into Britain. In view of the circumstances outlined above, we understand that a sanitary survey of the ports of England and Wales

is being carried out by the central health authority. A similar survey was undertaken in 1892-93 when cholera threatened to gain a footing in this country, and two subsequent surveys were made in 1900 and 1907 respectively on account of the prevalence of plague. These surveys gave a great stimulus to improvement in the port sanitary administration of the districts visited, and another survey at the present time appears to be peculiarly opportune.

When in August last epidemic poliomyelitis assumed alarming proportions in New York and in other parts of the United States of America fear was expressed that the infection might be brought to this country and give rise to outbreaks here. Such anticipations have not, however, been realised, for we understand that the incidence of the disease, which may be regarded as endemic in Britain, has been only slightly greater during 1916 than in the previous year. There was, however, an epidemic of the malady in the city of Aberdeen, where the disease has been prevalent since July, and some 79 cases have been notified. In Ireland also cases have occurred during the summer and autumn, among other places, in the union of Castlerea, in Claremorris and Carrickmacross, while there was a small outbreak in county Cavan.

With regard to cerebro-spinal fever, though still widely prevalent, there have been fewer cases this year among the civil community than there were in 1915. In certain districts scarlet fever continued to have a high rate of prevalence, but the type of the disease was mild for the most part. There was also considerable prevalence of diphtheria in a number of areas.

Health of the Home Forces.

We understand that the health of the troops stationed in or undergoing training in this country during the year has, upon the whole, been excellent. The military authorities are to be congratulated on the manner in which they have dealt with cerebro-spinal fever which last year threatened to become a serious scourge in the Army. Much useful work has been done in the detection of cerebro-spinal fever "carriers" by means of bacteriological investigation, and considerable advance has been made in our knowledge of appropriate methods of treating these "carriers" so as to render them free from danger to themselves as well as to those with whom they associate. Owing to the exigencies of military service the problem of preventing the spread of this disease is in some respects more difficult among troops than among the civilian population, the men being gathered together under conditions peculiarly liable to facilitate the conveyance of infection from person to person. It is satisfactory to know that during 1916 the incidence of cerebro-spinal fever among the home forces has been less than last year. The number of cases of measles and German measles has been, perhaps, a little surprising, as these affections are generally regarded as ailments of childhood rather than of adult life, but it is probable that a large percentage of the soldiers attacked may have come from rural districts where there has been little prevalence of these diseases. Scabies has given rise to a good deal of trouble, but has yielded to the curative and preventive methods employed.

The Control of Venereal Diseases.

Perhaps the most important event of the year in the public health world was the issue by the Local Government Board of the Public Health (Venereal Diseases) Regulations, 1916, which provide that the council of every county and county borough (1) shall, subject to the approval of the Local Government Board, make arrangements for enabling any medical practitioner practising in the area of the council to obtain, at the cost of the council, a scientific report on any material which the practitioner may submit from a patient suspected to be suffering from venereal disease; and (2) shall prepare and submit to the Local Government Board a scheme (a) for the treatment at and in hospitals or other institutions of persons suffering from venereal disease, and (b) for supplying medical practitioners with salvarsan or its substitutes, 75 per cent. of the cost incurred by local authorities in carrying out approved schemes is to be repaid from Imperial funds. A memorandum by the medical officer of the Local Government Board on the organisation of measures against venereal diseases, on the lines laid down by the Royal Commission, was also issued.

The recommendations of the Commission have not been universally accepted without criticism. In certain quarters, for example, it is contended that compulsory notification of venereal diseases is essential to the success of measures directed toward their prevention, while in others such a course is strongly deprecated. The opinion has also been expressed that the treatment of these diseases by druggists and persons not qualified to practise medicine should have been made illegal, and, in view of the extensive prevalence of this most undesirable custom, drastic action for its repression seems to be called for. Of course, the whole problem of the prevention of venereal diseases is one of much difficulty, but the work contemplated in connexion with the Public Health (Venereal Diseases) Regulations, though, perhaps, not as complete or entirely satisfactory in character as some could have wished, inaugurates a new era; the Government has at last awakened to the importance of the subject and is determined to do something toward mitigating an evil which has been far too long neglected. Considerable progress has already been made in the preparation of schemes, and nothing but good can result from the efforts of the general hospitals, the pathological laboratories, and the public health service working in unison.

Some Points in Public Health Administration.

With the view of preventing men suffering from tuberculosis being admitted into the Army a circular letter was issued by the Local Government Board on May 6th, 1916, urging local authorities to allow their tuberculosis officers to assist the military authorities in the examination of recruits and in such other ways as may be desired. Regulations were also issued on May 13th, 1916, requiring every medical officer of health, during the continuation of the war, to send to the Army Council periodically lists containing the names and other specified particulars of all male persons of certain ages who have been or may be notified as suffering from tuberculosis. The regulations provide that all information received in pursuance thereof shall be regarded by every person who may have access thereto as confidential.

In a circular letter dated Sept. 23rd the Local Government Board draws the attention of county councils to the fact that the duties of health visitor, inspector of midwives, tuberculosis visitor, and sometimes also those of school nurse and mental deficiency visitor, may often be carried out by one individual officer, thus economising time and travelling expenses and securing uniform medical supervision. Work in connexion with child-welfare and maternity appears to be making satisfactory progress throughout the country. In Part III. of the Forty-fifth Annual Report of the Local Government Board it is stated that nearly 400 whole-time and over 600 part-time health visitors have now been appointed by local authorities, while over 300 municipal centres and more than 350 voluntary centres have been established.

ANÆSTHETICS.

Dr. CRILE's elaborate theories on the nature of anæsthesia have been expounded in various contributions to medical journals. His experiments are not unquestioned,¹ nor has he met the two controverting facts that while, on the one hand, alkalinity does not remove anæsthesia, acidosis commonly occurs without provoking it. Coma is not synonymous with anæsthesia. Still, all Dr. CRILE's work provokes thought. Geheimrath Professor BARNHARD KROENIG,² working with Dr. P. W. SIEGEL (Freiburg), asserts that CRILE's anoci-association—i.e., (1) blocking all entrant stimuli; (2) suppressing post-operative pain—can be obtained by paravertebral anæsthesia with hypodermic injections of scopalamine and narcophine. He also dusts the traumatised surfaces with a powder called anæsthesin. His plan is to seek for and inject the intercostal nerves according to the area of operation. He regards the viscera as insensitive. Gynæcological—i.e., pelvic—operations he admits are less easily dealt with by his method. The after-pain appears not to have been abolished in his cases. Dr. BRANSFORD LEWIS³ and Dr. L. BARTELS extol sacral analgesia in genito-urinary surgery. The latter appears to find access to the canal easy in even old subjects, but this is not

¹ THE LANCET, 1916, i, 578.

² Surg., Gyn., and Obstet., November.

³ Ibid, p. 262.

the usual experience. He warns against wounding veins and piercing the membranes, accidents not always easy to avoid. Although his cases are few, he claims that upon the whole the method is valuable for prostatectomies, bladder, urethral, and even rectal operations. Dr. C. L. HOAG and Dr. I. WEBSTER and Dr. W. LIND have met with success in applying "anoci-association" to parturition. They claim that perineal injections lessen rigidity, and scopolamine injected during the first stage assists without being deleterious to mother or child.

Dr. R. W. KING⁴ reports 100 cases of labour in which novocaine and adrenalin were used. He regards superficial after-sloughing of the labia as unimportant. THE LANCET⁵ considers as a grave danger the recent propaganda in favour of GAUSS'S Dämmerschlaf method (twilight sleep in labour) in the lay as well as the professional press. It sums up the evidence and considers that without strict precautions the method is fraught with serious danger. In our columns and elsewhere many papers have appeared upon the use of spinal analgesia for operations involving the Trendelenburg position.⁶ There appears, however, to be some disagreement in the technique employed—e.g., some surgeons extol the use of light, others that of heavy fluids (Barker's) for injection. Some writers advocate the dorso-lumbar site for puncture. Dr. KNIGHT⁷ gives statistics of fatalities under spinal analgesia. These evince a striking disparity: Strauss, 1 in 3500; McCardie (collected from various sources), 1 in 826; König, 1 in 200; Thomaschewsky, 1 in 17,847. The employment of a mixed method, spinal analgesia and general anaesthesia, has been rather widely adopted for operations involving great shock, e.g., Wertheim's, the abdomino-perineal, removal of rectal carcinoma. Many complicate the procedure by also injecting scopolamine morphine and infusing saline, so that it is impossible to estimate to which factor the good results claimed are due. A paper by Dr. J. F. BALDWIN⁸ produces striking statistics of fatalities occurring under nitrous oxide and oxygen used in major surgery. Although extremely safe in brief administration he regards this anaesthetic as very dangerous in prolonged cases, although he admits its value in skilled hands within a limited field. Dr. R. C. CRAWFORD⁹ points out that if the air passages are kept patent by a respiratory tube danger is prevented.

Much useful work has been done in the Section of Anaesthetics of the Royal Society of Medicine during the year. *Inter alia*, the subjects of the value of warmed anaesthetic vapours, the composition of the vapour under an (?) "open ether" mask, and the treatment of circulatory failure by heart massage, were discussed. Similar valuable investigations have been carried out by the American Society of Anaesthetists, and this body has issued a useful year-book.

THE ROYAL NAVAL, ARMY, AND INDIAN MEDICAL SERVICES.

Royal Naval Medical Service.

In spite of the incessant and strenuous active service of the Royal Navy during the past year a considerable amount of scientific investigation has been accomplished by its medical officers. Two especially valuable researches have been those of Staff-Surgeon HARDY WELLS on aeroplane injuries and diseases, an entirely new field for medical and surgical investigation, and an inquiry into the spread of trematode diseases, especially with reference to *Schistosoma japonicum* in the Far East, by Staff-Surgeon E. L. ATKINSON.

No changes of importance have occurred in the higher personnel of the Naval Medical Department nor in the conditions of service. Never in the history of our country has the Royal Navy occupied a higher place in the regard and affections of the nation, which is well aware of its obligations to the service, while to the medical staff is due its full share of this debt of gratitude.

The list of losses by death is not a long one, apart from casualties occurring on active service. Fleet-Surgeon JAMES MOWAT, after 20 years' service in the Royal Navy, retired, but on the outbreak of war returned to duty, and was appointed to the *Hermes*; she was sunk in 1914, and Fleet-

Surgeon MOWAT'S work in attending to the wounded was mentioned in despatches. He was invalided for shock, caused by the disaster, but last year joined the Royal Army Medical Corps as Major, and was on his way to the Dardanelles in the *Royal Edward* when she was sunk.

Army Medical Service.

The opportunities for advancement of scientific research have been restricted in many directions, but the large field of observation afforded by active service operations on an immense scale has yielded very considerable results that in due time will be placed on record. Apart from this, some valuable researches on the mode of spread of amoebic dysentery and the life-history of pathogenic amoebae and other protozoa have been carried out and published by Captain DAVID THOMSON, R.A.M.C., and Captain GORDON THOMSON, R.A.M.C., in Egypt, and on the cultural characters and differentiation of the typhoid coli group of organisms by Captain H. L. TIDY and Lieutenant I. P. S. DUNN, R.A.M.C., at the Army Medical College.

Owing to the unprecedented conditions arising from the war it was decided in the early part of 1915 to duplicate the office of Director-General, Sir ARTHUR SLOGGETT, the existing head of the medical service of the Army, becoming Director-General of the Expeditionary Force, while Sir ALFRED KEOGH, who had been Director-General up to 1910, and who was in 1915 acting as Chief Commissioner for the British Red Cross Society in France and Belgium, became Director-General of the Army Medical Service at home. Early in 1916 Surgeon-General Sir W. BARTIE, V.C., who had been Director of Medical Services in India, and subsequently in Egypt and the Mediterranean, was brought home to assist Sir A. KEOGH, especially in regard to the supervision of invaliding and questions connected with the medical care of the troops at home. The enormous increase of the strength of the Army and the multiplicity and urgency of the requirements as to accommodation, sanitation, and organisation rendered this innovation absolutely necessary. In October Surgeon-General T. J. O'DONNELL, C.B., was appointed Director of Medical Services in India.

For the rest, the work of the service is written in the history of the war.

Indian Medical Service.

An important step in the advancement of scientific research in India has been taken by the establishment of a hospital for tropical diseases in Calcutta, the foundation-stone of which was laid by Lord CARMICHAEL, Governor of Bengal, in February, 1916. There will be over 100 beds, with complete equipment for pathological research in connexion with the Calcutta School of Tropical Medicine. The first Director of the school is Sir LEONARD ROGERS, to whose energy and persistence its establishment is largely due.

Surgeon-General Sir C. P. LUKIS, K.C.S.I., Director-General, I.M.S., was appointed to act as Director of Medical Services in India (the officer formerly known as Principal Medical Officer, H.M. Forces in India) in April; and, resulting from this, Colonel H. HENDLEY, I.M.S., was appointed to act as Director-General, I.M.S. The control of the whole medical service, civil and military, is now vested in one officer, presumably for the duration of the war. An important step has been taken by the promulgation of an Order in Council by the Secretary of State for India that the President of the Medical Board at the India Office shall also be Medical Adviser to the Secretary of State. This will lead to a considerable increase in the responsibility and influence of the holder of the office, who at the present time is Sir R. HAVELOCK CHARLES.

The Indian service has sustained severe losses by death during the past year, though we mention specially two names only. Sir GEORGE SCOTT ROBERTSON, K.C.S.I., had an adventurous and varied career. He served in the Afghan War of 1879-80 and in the Hunza Nagar Expedition of 1891-92; he was sent on various political missions to the Indian frontier tribes, and in 1895 was besieged in Chitral, where he was severely wounded. He was subsequently political agent at Gilgit, and on retirement entered the House of Commons. Lieutenant-Colonel G. M. J. GILES, of the Bengal Service, served in the Zulu War, was Surgeon-Naturalist in the Indian Marine Service, and accompanied Sir WILLIAM LOCKHART in his exploration of the Pamirs. He was author of several works on tropical medicine and climatology; at the beginning of the war he joined the Canadian Army Medical Corps.

⁴ Surg., Gyn., and Obstet., November, p. 615.

⁵ THE LANCET, 1916, II., 609.

⁶ See THE LANCET, 1916, I., 1169, 1277; II., 78, 645. Also paper by John Morley, Oct. 21st. Surg., Gyn., and Obstet., I., 955, et passim.

⁷ Amer. J. of Obstet. and Dis. of Women and Children, June.

⁸ Medical Record, July 29th; see also THE LANCET, 1916, II., 566.

⁹ Amer. Med. Assn., I., 799.

DENTAL SURGERY.

During the past year the attention of the dental profession has been mainly directed to problems arising out of the war. The position of those liable for military service has been one of anxiety. Those possessing medical qualifications have been able to obtain commissions in the Royal Army Medical Corps, but those only possessing the dental licence have not always been able to obtain commissions as dental lieutenants, with the result that many have had to pass into the combatant ranks—a condition of affairs which serves as a conspicuous example of the great waste of skilled labour in the conduct of the war.

Gunshot Injuries of the Jaw.

During the year fresh centres for the treatment of gunshot injuries of the jaw have been formed with apparently most satisfactory results. The treatment of these injuries has excited keen interest and two important gatherings have been held in this country to discuss the problems involved in treatment. The first, in the early part of the year, was a special meeting of the Odontological Section of the Royal Society of Medicine; the second, and the more important, was held in the summer under the control of the British Dental Association. The various dental journals have also contained numerous papers on the treatment of the fractured jaw. In the majority of the papers stress has been laid upon the necessity of reducing the fragments until the teeth are in correct occlusion, the authors apparently being satisfied in many cases with fibrous union. Various types of mechanical apparatus have been described with a view of attaining ideal occlusion. Of these papers perhaps the most complete was that published by Dr. O. RUBBRECHT, of Ghent,¹ who described the technique employed in nine cases and gave illustrations of the condition before and after treatment. Mr. C. H. BUBB has also published a paper on some technical details in treatment. He states that he is able to control the posterior fragment, even when edentulous, with an extension of soft rubber or gutta-percha to a fixed metal splint, but no record is given of cases treated. In a paper published in the April number of the *Journal of the Royal Army Medical Corps* Mr. J. F. COLYER drew attention to the advisability of obtaining osseous union whenever possible and pointed out that the malocclusion of the teeth which follows in some cases can easily be remedied by properly constructed dentures. In his paper he showed the great importance of removing the teeth in connexion with the fractured area, and supported his contention by a record of cases. He also advocated that the teeth in the region of the fracture should be removed as a routine practice. An interesting series of papers on patients treated at the American Ambulance in Paris has been published in various issues of the *Dental Cosmos*.

Mr. J. LEWIN PAYNE, in a paper read at the Royal Society of Medicine on Feb. 28th, suggested the following classification of injuries of the mandible founded upon the clinical aspects of the injuries: (1) Fractures of the mandible without displacement of the line of occlusion; (2) single fractures of the mandible with lateral displacement; (3) single fractures of the mandible with vertical displacement; (4) two or more fractures of the mandible with loss of substance; (5) gunshot wounds of the maxillæ; (6) fractures involving loss of the anterior portion of the mandible, the maxillæ, or of the whole of one side, together with the soft tissue adjacent.

In the *British Dental Journal* of Oct. 2nd Dr. V. H. KAZANJIAN published a valuable paper on the immediate treatment of gunshot fracture of the jaws. The paper was carefully thought out and well illustrated.

FORENSIC MEDICINE.

Throughout the year now drawing to its close the war has had the effect of checking legislation and litigation, and of preventing publicity being given to the reports of cases coming before the various courts of law, except where the subjects dealt with or the persons concerned are considered to be of general interest. A few typical cases in this category are mentioned below in some detail. On the other hand, the annual report of the Medical Defence Union, issued in the autumn, showed that its legal business with regard to the affairs of medical men has been largely increased owing to the war. The enforced absence of practitioners

on war service has caused questions to arise with regard to many matters, such as the carrying out or varying of partnership deeds, the grouping of practices, and the employment of locum tenents. Medical men have also required advice in connexion with their service under the Crown, and when on active service abroad have had to consult the London and Counties Medical Protection Society or the Medical Defence Union as to the conduct of their affairs at home.

The Acts of Parliament which have affected the medical profession during 1916 have chiefly been those relating to medical service in the war, which can hardly be regarded as within the sphere of forensic medicine. The Midwives (Scotland) Act, passed in 1915, came into force on Jan. 1st, 1916; it follows the general principles of the Act relating to England but introduces an innovation in permitting a midwife to grant certificates when these are required in connexion with maternity benefit by Approved Societies or Insurance Committees. It provides also for the payment of medical men summoned by midwives to attend when special emergencies arise.

Curtailement of the Duties of Certifying Surgeons.

In accordance with a recommendation of the Committee on Retrenchment and Reform the Factory Department of the Home Office announced that on and after Sept. 4th it would not be necessary for the occupier of a factory to notify an accident to the certifying surgeon, under Section 8 of the Police, Factories, &c. (Miscellaneous Provisions), Act, 1916.

Heat-stroke as an Accident.

The Court of Appeal had before it the case of *Pyper v. The Manchester Liners, Limited*, in which the representatives of a stoker who had died of heat-stroke in the Red Sea claimed against the owners under the Workmen's Compensation Act. The court distinguished the case from that of *Ismay, Imrie, and Co. v. Williamson*, holding that the latter did not go so far as to make all cases of death by heat-stroke in ships' stokeholds "accidents," and that there was not in that case, or in those in which it had been followed, "a voluntary submission to a well-known normal cause affecting the greater part of the crew and known by the deceased to be likely to affect him."

The Property in a Prescription.

In the Honiton county court a firm of druggists was sued by a lady and her husband for whom they had made up a prescription given to the wife by her medical attendant. The medical practitioner had arranged with the druggists that they should not return his prescriptions to his patients. The county court judge held that no property in the document had passed to the plaintiffs, as the prescription had only been handed to them in order that they might convey it to the druggists instead of the medical man sending it to them himself. Judgment was accordingly given for the defendants.

Medical Practitioners' Fees.

A medical man recovered a sum of £18 for fees for attendance upon the members of the Juvenile Oddfellows' Society. The defence was that the fees in question were in respect of members whose subscriptions were in arrear, and that it was for the medical practitioner to ascertain whether his patient was entitled to attendance at the Society's expense. For the plaintiff it was contended that it was for the Society to inform him when subscriptions were in arrear, and that when he had made his agreement with it an arrangement had been entered into to disregard short periods of non-payment of subscriptions. His honour Judge GYE (since deceased) gave judgment for the medical man with costs on the higher scale. A claim for fees for medical attendance upon an insured patient was successfully made by a medical man at Liverpool, the defence being that as the patient was on his panel list of patients, and had been attended as such, no fee could be recovered. It was, however, given in evidence that the patient had been removed to a nursing home at a distance from the doctor's residence and that he had been specially requested by her husband to continue his attendance upon her. The county court judge held that it was unreasonable to think that visits at such a distance would be made without charge and that the medical man was entitled to recover for them.

Medical Men and Declarations for Passports.

Medical men are not infrequently approached with a view to their helping to obtain passports for persons with whom they are, at best, but slightly acquainted. Knowingly

¹ *British Dental Journal*, Oct. 16th.

to make a false declaration on such an occasion is a serious offence, and a medical man in London, who was acquitted upon a charge of signing such a declaration, only escaped conviction because having personally questioned the applicant for a passport he could hardly be said to have no personal knowledge of her. He had acted in perfect good faith at the request of a patient, but nevertheless the person for whom he accepted responsibility was afterwards sentenced to a long term of imprisonment under the Defence of the Realm Act.

Bogus Practitioners.

The absence of medical men from their practices through war service and the demand for medical practitioners to undertake civil and military duties have been taken advantage of in several instances by impostors. Among these H. J. HERRING, an unqualified person who several years ago was sentenced to five years' penal servitude for manslaughter committed when personating a medical man, was sentenced to four years' penal servitude at the Central Criminal Court for bigamy and for feloniously giving death certificates. He had personated a medical practitioner, Mr. E. K. HERRING, practising in New South Wales, and so obtained a post as locum tenens.

R. v. Burdee: Manslaughter by an Unqualified Person.

In the case of an unqualified person, who was sentenced to 12 months' imprisonment for the manslaughter of an elderly woman, to whom he had applied a so-called "cold water cure," Mr. Justice DARLING said that if a person, whether a qualified practitioner or not, professed to deal with the life or health of any person, he was bound to have competent skill to perform the task. The convict had held himself out as qualified to perform certain work, and he was bound to treat his patients with care and attention.

CHEMISTRY.

The war has set back pure science for a while in this country, but it has given a very decided and welcome stimulus to the application of scientific knowledge to pressing practical affairs. The scientific staffs at our universities and schools, hitherto engaged on academic work, have, to a large extent, been transferred to work of immediate national importance, and in consequence there is little to report in regard to pure research. Many interesting theoretical questions must perforce remain in abeyance, but the union of workshop and laboratory has been effected.

It is being very generally recognised that the future of scientific industry can only be secured by greater progress in organisation and by co-operation amongst the various manufacturers engaged in it, added to which there must be an important development in our system of technical education so as to increase the efficiency of labour and its scientific management. There must, however, be State assistance in this matter; chemistry in particular requires just the sort of support that is forthcoming at the present time in the prosecution of research aimed at replacing so many essential materials hitherto exclusively supplied by the enemy. Good progress here is being made in the dye industry and many colouring matters formerly made abroad have now been successfully prepared. Again, considerable advances have been reported in the manufacture of synthetics, and particularly of drugs and medicinal agents. The university and the factory have combined most usefully in this direction, while several well-known firms of manufacturing chemists have given determined and successful attention to the elaboration of fine products which were hitherto enemy monopolies. The following substances may be mentioned: the salicylates, including aspirin, the organic arsenic derivatives used in syphilis, phenacetin, homatropine, pilocarpine, glycerophosphates, benzamine derivatives, hexamine, adalin, benzinidin, allantoin, betanaphthol, formaldehyde, resorcin, hydroquinone, chloral-amide, cotarnin, ichthyol, and eau de Cologne. To these may be added lanoline, which is now prepared in this country, the product satisfying the requirements of the British Pharmacopœia, and, in fact, reaching a higher standard than that laid down. There is thus nothing wrong with British effort and brain, and such achievements must receive our admiration, but these gains can only be retained by a national determination to support British enterprise. We were unprepared for the war; we must be prepared for the fierce economic struggle which is almost certain to succeed peace.

CONTRIBUTIONS FROM "THE LANCET" LABORATORY.

Throughout the year the total number of articles reported upon in our analytical columns was 37, involving just a hundred analytical determinations. In the monthly records of atmospheric pollution, published as soon as possible after the returns from the various stations have been received, the analyses made in THE LANCET laboratory for the Meteorological Office amounted to 130. In a special article entitled "Paraffinum Liquidum: the B.P. Standard Ignored," published in our issue of August 12th, it was pointed out that certain American oils were being imported into this country which were not refined to the extent that is desirable for medicinal purposes as an intestinal lubricant. While these, according to examination, did not exhibit fluorescence, colour, odour, or taste, they were below the wide limits laid down in the British Pharmacopœia in regard to specific gravity. Moreover, their viscosity was so low as to exclude them for the purpose of effectively lubricating the intestinal tract. In connexion with this inquiry 17 analytical determinations were made; the total number of laboratory analyses carried out during the year being 274. It may be added that the large increase in the cost of chemical reagents is seriously handicapping analytical operations in all laboratories, while in some cases the reagents are unobtainable.

HONOURS TO MEDICAL MEN.

The honours which have been bestowed upon members of the medical profession in connexion with the war will be found recorded in our columns from week to week during the year. We give below, however, a list of the New Year and Birthday Honours, though here also services in connexion with the war are included.

Among the newly created knights in the New Year list were Sir GEORGE A. BERRY, Sir THOMAS WRIGHT PARKINSON, and Sir MILSOM REES, C.V.O. A knighthood was also conferred upon Dr. RAI KAILASH CHANDRA BASU BAHADUR, of Calcutta. Surgeon-General Sir JAMES PORTER, R.N., and Temporary Surgeon-General Sir WILLIAM WATSON CHEYNE, R.N., were made K.C.M.G.'s; and Surgeon-General GUY C. JONES, Director of Medical Services to the Canadian Expeditionary Force, a C.M.G. To the Order of the Indian Empire were appointed as Companions Dr. JOHN ANDREW TURNER, Lieutenant-Colonel ROBERT CHARLES MACWATT, I.M.S., and Dr. SURESH PRASAD SARBADHIKARY, of Calcutta. In the Order of the Bath Fleet-Surgeon A. GASKELL, R.N., Surgeon-General W. H. NORMAN, R.N., Temporary Surgeon-General H. D. ROLLESTON, R.N., and Colonel W. W. WHITE, I.M.S., received Companionships; in the Royal Victorian Order Surgeon-General Sir ANTHONY A. BOWLEY was made a Knight Commander; and Staff-Surgeon ROBERT JOSEPH WILLAN, R.N., a Member.

The Birthday list included the names of Dr. CHRISTOPHER ADDISON, M.P., who was made a P.O. Those receiving knighthoods were Sir ARMAND MARC RUFFER, C.M.G., and Sir NESTOR TIRARD. Dr. FREDERICK MONTIZAMBERT, I.S.O., Director-General of Public Health of Canada, was awarded a C.M.G., and Fleet-Surgeon E. C. LOMAS, R.N., D.S.O., Surgeon-General J. J. DENNIS, R.N., Colonel A. P. BLENKINSOP, Assistant Director-General, A.M.S., and Major P. S. LELEAN were made C.B.'s. Dr. NOEL BARDSWELL and Dr. FREDERICK HEWETT were made members of the Fourth Class of the Victorian Order. In the Indian List Major F. N. WHITE, Assistant Director-General, I.M.S., Lieutenant Colonel J. JACKSON, I.M.S., and Captain A. G. J. MACILWAINE, R.A.M.C., received the C.I.E., and Mr. H. M. NEWTON, Dr. R. G. ROBSON, and the Rev. PETER CULLEN, Brigade-Surgeon Lieutenant-Colonel, I.M.S. (retired), were awarded the Kaiser-i-Hind Gold Medal.

GENERAL MEDICAL COUNCIL.

Each of the two sessions of the General Medical Council during the year was short in duration, but at both important proceedings took place, mainly in connexion with the conditions produced by the war. The maintaining of the supply of practitioners sufficient for the needs of the country, while the calling up of junior medical students under successive systems of recruiting was going on, has produced a position which the Council was bound to consider an anxious one. In 1915 354 names in excess of the average of

the preceding five years were added to the Register, while there were also 500 medical students in excess of the same average; but Sir DONALD MACALISTER, the President of the Council, having the current figures before him, warned the Council that these became much less favourable as time went on. During 1916 depletion was found to be growing marked in the three- and four-year groups of students, as well as in the immediate entries. A census of medical students in the various schools of the United Kingdom was published in the proceedings of the December session, which showed a large increase of women students. At this meeting Sir DONALD MACALISTER reported to the Council that he had called the attention of the military authorities to the danger of further demands on medical students, with the result that the Army Council issued orders that registered medical students not classed as "fit for general service" are now relegated to the reserve, on condition that, while left to pursue their professional studies, they enrol themselves in an Officers Training Corps. In regard to recruiting the members of the medical profession for the Navy and Army the Council communicated with the Admiralty, the War Office, and the Central Committees established in England and Scotland for the purpose of assisting the Government and the medical profession, and in this way coöperated in trying to secure the proper allocation of available medical men to the two Services. In the work of the Professional Recruiting Committees certain members of the General Medical Council played an active part, so that the Council, directly and indirectly, has served well the interests both of the State and the medical profession in a matter of increasing difficulty.

Among the penal proceedings of the Council there have been several cases which turned upon the issue by medical practitioners of irregular medical certificates. There has been for some time a heavy demand on medical men for certificates, a demand which was increased by the National Insurance Act and further exaggerated by the war. The signing of medical certificates now gives enormous trouble to the medical profession with no commensurate return, but the Council, though quite aware of this point, promulgated a definite warning that the giving of irregular medical certificates was a grave professional sin. Medical practitioners are entrusted by the State with a responsibility carrying its obligations; those who are found faithless in discharging these obligations may expect now to be treated with severity.

BRITISH MEDICAL ASSOCIATION.

The work of the British Medical Association during the year has been largely concentrated upon the task of keeping the Navy and Army adequately supplied with medical practitioners without depriving the public of the necessary medical service. The Central Medical War Committee, whose administration has been conducted through the organisation of the Association, have taken measures whereby the calls upon practitioners to leave their civil duties and accept commissions have been rendered as fair as possible, and all the energies of the Association have been devoted to what has proved a difficult and delicate undertaking.

At the annual meeting of the Association the scientific and social sides were very properly dropped on account of the war, while the business generally done was purely formal. At the Representative Meeting held in London on July 28th some important subjects were discussed, especially the arrangements shortly to come into force for the State treatment of venereal diseases. A unanimous vote of the Representatives resolved that every local authority concerned in any plan for the diagnosis and treatment of venereal diseases should arrange for effective consultation at the early stages of the scheme with the local medical profession. There seems no doubt that the opinion of the medical profession as thus expressed will be respected.

THE PROFESSIONAL RECRUITING COMMITTEES.

During the year three professional Committees were recognised by the War Office to deal with claims for exemptions made by duly qualified medical practitioners—namely, the Central Medical War Committee, the Committee of Reference of the Royal College of Physicians of London and the Royal College of Surgeons of England, and the Scottish

Medical Service Emergency Committee. These bodies had already been utilised by the Government in arranging for the selection of medical men for service as doctors in the Naval and Military forces and in connexion with the work of the Central Tribunal, and their activities have been regularly chronicled in THE LANCET since their formation. The Scottish Medical Service Emergency Committee, possessing a detailed knowledge of the medical men within its sphere of work, was able from the date of its formation to render practical recruiting aid and to arrange for the carrying on by substituted service of civilian practices. The task before the Central Medical War Committee was harder, and the Committee of Reference of the Royal Colleges took one important and delicate section of the work out of the hands of the larger body by dealing with the whole question of the exemptions that should be granted to medical men connected with the staffs of the London hospitals. The medical profession in England and Wales has been submitted by the Central Medical War Committee to a continual analysis, assistance in this great undertaking having been given by the three great public departments directly concerned in the supply of medical men for civilian purposes—viz., the Local Government Board, the Board of Education, and the National Health Insurance Commission. The work of the Committee has been carried on through the organisation of the British Medical Association, and has grown steadily harder as the calls of the Army increased with the prolongation of the war. At the end of the year the work of the three Committees received a great impetus from the declaration made by Mr. LLOYD GEORGE in his speech in the House of Commons on becoming Prime Minister, in which the intention of the Government was stated to use all the man-power of the country to the best advantage for the prosecution of the war. The Prime Minister's words suggested that the mobilisation of the medical profession for purposes of the war, a movement which had already received support when the principles involved were debated at the Central Medical War Committee, might become the policy of the State. The work done by the three Committees has been directly preparatory to such a course, and, whether mobilisation follows Government action or arises out of voluntary effort, it may fairly be expected to proceed on similar lines in either event. Facts and figures, in mass and detail, have been collected by the Committees which ought to ensure the burden of mobilisation being fairly borne by the whole constituency, although it may be easy at the present moment to produce examples where the reverse conditions prevail.

THE MEDICAL RESEARCH COMMITTEE OF THE NATIONAL HEALTH INSURANCE COMMISSION.

The work of the Medical Research Committee throughout the year has been large and strenuous, as was proved by the second annual report, published at the close of the year. The Committee have obtained the complete record of every man in the Army who has been invalided from any cause from the time of his being wounded or being taken ill. The registers of 2000 military hospitals have been laid under contribution to this end, a uniform card system having been adopted by each institution. While most of the funds and scientific resources of the Committee have been devoted to medical questions of immediate national urgency, certain pre-war work—that in connexion with tuberculosis and rickets for example—has been carried on, while physiological research has been conducted in connexion with such varied problems as are presented by factory hygiene, poison-gases and trench-foot, to mention only three directions of the activity displayed. Assistance has been given by the Committee to an organised inquiry into fatigue in factories, and the information gained formed the basis of action for the Committee on the Health of Munition Workers when framing measures for the benefit of the workers. The physiological testing of salvarsan and its similars of French and British origin has also been undertaken; this is a task which will be of assistance to various State-supported schemes all over the country for the control of venereal disease. The value of the work of the Medical Research Committee is now uniformly recognised. Many of the scientific communications made to the Committee have appeared in our columns during the year.

THE LANCET, VOL. II., 1916 :
THE INDEX.

THE Index and Title-page to the volume of THE LANCET completed with the issue of Dec. 30th will be ready early in the New Year. Owing to the continued shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a post-card to the Manager, THE LANCET Office, 423, Strand, London, W.C., when a copy of the Index and Title-page will be supplied free of charge.

TUBERCULOSIS REPORTS.

Kent County Council.—The report from Kent is full of interest, and it is satisfactory to find that it has been possible to continue in full use the whole of the 20 dispensaries. In a scattered population the dispensary system is certainly the backbone of any efficient scheme for dealing with tuberculosis. To be regretted is the tardy and insufficient institutional accommodation for uninsured persons, but this defect is recognised and is being remedied. Special conditions have delayed the opening of the new sanatorium, but the small hospital at Keycol Hill has proved a help in dealing with some advanced as well as early cases. There are some very sound remarks upon "domiciliary" treatment, and although it must take a large amount of time for the tuberculosis officer to visit these cases, it is a desirable thing to do in coöperation with the panel doctor. The difficulty of providing extra nourishment has led to three "grades" being established, and 385 cases have been given extra food in one or other grade. Apparently voluntary care committees have not yet been established to deal with this part of the work. They should be found a distinct help to an otherwise elaborate scheme.

Borough of Middlesbrough.—The tuberculosis officer is able to report that 65 per cent. of cases who have been sent to sanatorium are now on full work. This certainly indicates that the cases are well chosen, and the method of recording results is a more practical one than that adopted by the Local Government Board. There will always be differences of opinion as to whether the disease is "arrested," and even as to whether there has been definite "improvement" resulting from certain treatment, but the fact of the working capacity being restored is a definite and easily ascertained criterion. There has evidently been sound coöperation with the school medical officers, and this augurs well for the work. The tuberculosis officer, who is a real optimist, finds the dispensary work the most economical and satisfying part of his scheme.

York City.—The stages of the disease are classified somewhat on Philip's lines, showing the relative amount of local and systemic involvement. This is a more scientific classification than Turban's, and the point is not purely an academic one, as many observers hold that a case where the local involvement is overbalanced by the systemic is not likely to do well at a sanatorium. A feature of the work has been the treatment of surgical tuberculosis in beds specially reserved at the County Hospital, and this probably solves a difficulty which many counties and boroughs are feeling, especially in relation to discharged soldiers. Care committees have been established and have already tackled the question of boarding out children in the early stages of the disease, an excellent and economically sound procedure. The tuberculosis officer reports the great need for accommodation for advanced cases.

Borough of Walsall.—It is rather disconcerting to find the definite increase in the death-rate in this borough, especially when lives are more valuable than ever, but the increase in the notification rate may really be a blessing in disguise. The work is apparently hampered by the lack of accommodation for advanced cases, and an open-air school, which should be part of the practical scheme in a borough of any size, is also a desideratum.

Paddington Dispensary for the Prevention of Consumption.—The sixth annual report only brings the work up to the end of 1914. The dispensary is now part of the official scheme for dealing with tuberculosis in the borough, and is linked up with the other details of the scheme. This has necessitated modifying some of the work in connexion with home visitation so as to prevent overlapping with the sanitary inspector's department. The fact that there were 651 new patients in 1914 shows the continued need for such an institution. The examination of contacts, which has been a distinctive feature of the work at Paddington from its commencement, shows no falling off, and 344 contacts were examined in 1914, 50 of them being found to be definite cases of tuberculosis. The importance of the contact examination is also emphasised by the fact that in 58 per cent. of the children found tuberculous a definite source of infection in the home was discovered. Philip's modification of Turban's classification is employed. The dispensary has the advantage of a voluntary care committee and also of Kensal House Open-air School, to which children are only admitted if the home conditions are good. It would seem at first sight as though those with *bad* home conditions should be dealt with first, but experience has shown that it really does not pay to spend money on patients who are bound to return to conditions which must inevitably lead to relapse. It is regrettable to find that the Poplar Open-air School had to be closed through lack of funds. The tuberculosis officer rightly pleads for more accommodation for advanced cases apart from the Poor-law provision, and also for a farm colony in connexion with the work.

York Tuberculosis Crusade.—The report of this association shows good work done, chiefly as a care committee coöperating with the dispensary. Twenty-six cases have been boarded-out under good conditions, and extra food and clothing have been supplied to cases on the recommendation of the clinical officer. The committee deplore the *bad* housing which renders so much of their work unsatisfactory, as do also all workers concerned with "domiciliary treatment."

Society for the Prevention and Cure of Consumption in the County of Durham.—The work has been maintained at the two sanatoriums in spite of severe losses of personnel and a serious increase in the cost of maintenance, amounting to 4s. 1d. for men and 4s. 10d. for women and children every week. A regrettable feature is the fact that the selection of cases does not appear to have been so satisfactory as in former years. The results naturally suffer and so does the usefulness of the work. The use of tuberculin has gradually been given up, though it is not quite clear upon what grounds. The difficulty of dealing with discharged soldiers who are disinclined to submit to discipline when once clear of the services is illustrated; most of them left within three weeks of their admission. This is a disturbing feature at many sanatoria and one which may well receive consideration by the Government authorities.

Hertfordshire County Council.—Dr. H. Hyslop Thomson concurs in the now general view that the dispensaries must be the pivot of any county scheme, whether they are staffed by full-time or by part-time tuberculosis officers. Tuberculin has been freely used, particularly T.O.A. and B.E., and has proved both safe and useful in dispensary practice. Extra food has had to be supplied in 142 cases, and the County Nursing Association have very generously agreed to charge no fee for nursing insured persons, so that this extra food may be available. Four care committees have already been started and eight are to follow, thus providing an efficient means of keeping in closer touch with the patients in their homes. The results of treatment are tabulated at the end of a particular course of treatment and not after an interval of time. This method, although apparently sanctioned by the Local Government Board, is unsatisfactory, in that no clue is given to the permanent value of the treatment indicated. The need of accommodation for acute cases is felt.

Devon Insurance Committee.—This is purely a lay report, and there is no comment by the tuberculosis officer. It records the treatment given by the Insurance Committee to each case and the condition of the patient 6 and 12 months afterwards. A large proportion of cases have apparently

been lost sight of, and the results are decidedly disappointing. Without analysis by the clinical officer no fair judgment can be passed on the work in Devon, but the figure given of only 38 per cent. improved does not seem on the face of it satisfactory. Apparently the system of employing health visitors to visit all notified cases and keep in constant touch with the home conditions has not been favourably received in Devon, and the dispensary work is not so prominent as in many other counties.

National Sanatorium Association.—This report concerns the Association's Sanatorium at Benenden, Kent, which has lately been passing through a period of considerable difficulty. Fortunately, prospects now seem brighter, and with the new and efficient staff which the association has been fortunate enough to obtain the sanatorium should continue to do good work. The financial difficulty has been felt acutely, and the committee justly plead for a larger measure of support for their work. Depending as they do almost entirely upon the working classes for financial aid, they have found it difficult to continue the work on broad lines. A pathetic incident in the year was the receipt from Southampton of £62 towards the Post Office block as a memorial to the two Post Office officials who went down in the *Titanic*. Dr. A. Niven Robertson has reorganised the whole of the arrangements for treatment by rest and graduated exercises on the lines laid down by Dr. Marcus Paterson, which permit of a much more gentle and regular increase in the work done by each patient, and therefore, presumably, in the amount of auto-inoculation produced, than is possible with other methods. A successful course of auto-inoculation requires to be as carefully graded and watched as a course of tuberculin inoculation, and this implies constant personal supervision from the medical officer himself. The tuberculins used have been T.Bk. (Beranek's), B.E., and P.T.O. The use of Spengler's I.K., carefully investigated recently by Dr. Robertson, has been discontinued, as the results were disappointing. The cases are usefully classified upon Philip's method, and the results also stated in terms both of the local and the systemic infection. Treatment by nascent iodine has been tried in 10 cases, and controlled by the Arneth count of white blood cells. In all the cases considerable improvement appears to have resulted. The sanatorium suffers from the disadvantage that, not being connected with a dispensary system, it can neither select its own cases nor look after them when discharged, or the results of treatment would undoubtedly be better.

National Association for the Prevention of Consumption.—The council report that a special feature this year has been the compilation of a handbook setting out in detail the present position of the tuberculosis work undertaken by public bodies under recent legislation. This they hope to keep up to date, and it should prove a valuable guide to the whole question. The association was also very active in voicing the demand for adequate treatment of the discharged tuberculous soldier, and that the question was a serious one is shown by the fact that no fewer than 2770 were invalided out of the Army during 1915 for tuberculosis. Dr. S. Jacob has continued his excellent work as a travelling lecturer, and has found ready audiences in spite of the war. Reports are also given of a number of local branches of the association which are doing useful work.

Loomis Sanatorium, New York.—There is a very elaborate report of the work done in this sanatorium, and it is interesting to notice that, although in a neutral country, the price of food rose by 4 to 5 cents a day per head in 1915. The usual sanatorium routine has been carried out, and about 10 per cent. of the patients also received a regular course of tuberculin, and in each case definite improvement resulted. At the close of their stay about 36 per cent. of the cases were reported as "apparently arrested," and the after-histories of former patients are carefully recorded. Working capacity, however, is not specially investigated, although those returned as "in a satisfactory physical condition" number over 60 per cent. Further information would be of interest in this direction.

Adirondack Cottage Sanatorium, New York.—This well-known institution has had another successful year, a new and interesting feature being the foundation of the Trudeau school for tuberculosis officers and specialists. As the sanatorium has its own tuberculosis dispensary at Saranac

Lake, clinical material is not wanting, and a fairly complete course of instruction can be provided. A number of the pupils are medical men themselves suffering from tuberculosis, and the venture is a commendable one. A training school for tuberculosis nurses is also attached. The laboratory attached to the sanatorium has, as usual, done interesting work, and is now engaged in an investigation into complement-fixation in relation to tuberculosis, with a view to finding some way of distinguishing active from arrested disease. Another point of interest is the record that in four cases the Wassermann reaction was positive, and in each case salvarsan was given with good result. About 1 in 8 of the cases were given tuberculin, and the results were satisfactory.

ANNUAL REPORT FOR 1915 OF THE CHIEF MEDICAL OFFICER OF THE BOARD OF EDUCATION.¹

THIS annual Blue-book,² much reduced in size owing to the exigencies of war economy, contains in a compact form particulars of the school medical service and its administration, of the physical conditions of school children, their medical treatment in school clinics and hospitals, the physical education of the child, and juvenile employment, with several appendices of statistical and official information.

The School Medical Service and Its Administration.

Sir George Newman, in his opening remarks, refers to the inevitable curtailment of the work of school hygiene owing to the circumstances of the war, but emphasises his conviction that it is now more than ever the imperative duty of the State to secure the health and physical efficiency of the coming generation by taking advantage of the unique opportunities which school medical inspection affords of nipping in the bud preventable disease. He points out further that "if we are determined to rear a healthy and virile race of high capacity we must, from a physical standpoint, begin earlier and continue later than the hitherto accepted period of education." He reports with satisfaction in regard to this desideratum that "a complete scheme is in process of building." 450 clinics for the treatment of diseases of school life have been established, and a beginning has been made in recovery and open-air schools. Special schools for the deaf, dumb, blind, and lame also exist, but there is need for extension in this direction. Above all, the condition of the child in its *individual* aspect must form the basis of its successful handling, whether by medical or by educational authorities.

Reviewing the administration of the school medical service, it is pointed out that the need for retrenchment during the past year, from considerations not merely of public economy but of the paucity of medical officers available, has of late necessarily limited its activities. Progressive schemes have consequently had to be deferred or curtailed, but continued attention to the established routine of work has been maintained notwithstanding the fact that the net loss in the number of school medical officers and their assistants approximates to about 12 per cent. Special inquiries have been carried out on the suggested subjects of adenoids and malnutrition, as well as upon the condition of the teeth and the morbid relations of oral sepsis; and Dr. W. H. Hamer, medical officer of health of the County of London, has contributed two interesting researches, one on A Persistent Carrier of Diphtheria Bacilli, the other on the Prevalence of Fleas in Relation to the Incidence of Scarlet Fever.

"Following up" has been carried on mainly by the school nurses and also by the children's care committees, who frequently assist parents to obtain material and medical aid when necessary for their children. Special schools for blind, deaf, defective, and epileptic children have, in spite of war difficulties, continued their useful work, and these numbered, in 1915, 403, as against 397 in the previous year; their aggregate accommodation being for 30,942 pupils;

¹ A leading article on this report was published in THE LANCET of Sept. 23rd, 1916, p. 561.

² London, 1916, Eyre and Spottiswoode, Ltd. Pp. 169 + viii. Price 9d.

2791 places being for blind, 4568 for deaf, 14,643 for mental defectives, and 5291 for those physically defective. There were also 1826 for tubercular cases, 496 for epileptics, and 1527 in open-air schools.

No less a sum than £411,428 was expended in 1914-15 on the school medical service, on account of which a Government grant of £192,414 was paid. Schools for mothers and day-nurseries also received grants from the Board amounting to £15,333 18s. with a view to the training of the mother in infant welfare, and the right commencement of the training of the child in the habits and ways of health.

Physical Conditions of School Children.

Section II., on Physical Conditions, deals with the following categories: (1) uncleanness, malnutrition, and minor ailments; (2) defective vision and adenoids; and (3) heart disease and tuberculosis.

Under the first heading a summary table is printed showing that in 40 educational areas (with average attendance of 1,091,431) of 380,891 children examined 84.6 per cent. were reported clean as regards condition of body, 14.6 per cent. as dirty, and 0.8 per cent. with pediculi present, with slightly higher percentages of unclean heads. This means that about 150,000 elementary school children in each million are unclean either in body or head, and many thousands of children are excluded from attendance at school daily on account of uncleanness. Consequently "a child habitually verminous is an uneducated child"; and surely, as a matter of public policy, the universal provision of "cleansing stations" (as has been effected in London) is imperative.

Amongst "minor ailments" are included cases of ring-worm, one of the most prolific causes of loss of school attendance, and it is satisfactory to learn that "a number of authorities have done admirable work" in organising methods for its prevention and cure, including, of course, X ray treatment. With regard to defective vision, attention is drawn to the much larger incidence of eye defects in urban as compared with rural areas, the percentage in the latter being only about 9, while in county boroughs it rises as high as 25. As these figures are based upon limited "sample" examinations they can hardly be accepted as final, and possibly the small proportion reported from the country may be due to inferior facilities for expert ophthalmic examination.

Considerable space is devoted to the subject of adenoids, and a report by Dr. Hamer is printed in full. Here, again, the prevalence appears to be greater in urban than in rural areas, though the difference is not so marked as with eye defects. It is stated that in 76 local education areas 309,637 children were examined and the percentage of those with adenoids was 3.7 and with marked adenoids 1.31. Dr. C. J. Thomas is quoted as reporting the percentage of children, aged between 11 and 12, in elementary schools affected with adenoids as 4.7 per cent. of boys and 5.4 of girls, as against 5.8 per cent. of boys and 9.2 of girls in mentally defective schools, while amongst scholarship children of the same age the percentage was only 1.9 for boys and 2.2 for girls.

Heart disease was reported in from 1 to 5 per cent. of the children examined in 1915; but the chief medical officer seems to think that there is room for greater care and discrimination in this regard. In this connexion a useful leaflet for parents on "The Control of Rheumatic Fever," issued by the school medical officer for Tunbridge Wells, is printed in the report.

Some ten pages are occupied with the subject of tuberculosis in children. An elaborate table of the mortality at several ages (4 groups being under 15) from all causes and from tuberculous disease, 1907-15, has been furnished by Dr. T. H. O. Stevenson, Superintendent of Statistics, and precedes one compiled from returns supplied by school medical officers from 1911 to 1915. The latter gives 0.46 as the percentage of tuberculosis found in 1915 in the routine examination of 272,618 children in 52 areas, about one-third being cases of phthisis, and a percentage of 2.46 found amongst "special cases," i.e., cases specially selected as ailing, in 19 areas. Six open-air day schools have been certified for phthisical children, who are also received at Parkhill Hospital, Liverpool. Four metropolitan hospitals, admitting children with surgical tuberculosis, have been certified as day special schools by

the Board; and 18 residential sanatorium schools in the country have also been certified.

Medical Treatment.—Physical Education of the Child.

Section III. deals with medical treatment, and of this the two-fold object is stated to be: (1) to remove obstacles to the normal and proper educational development of the child, physically and mentally, and (2) to assist nature in bringing about the cure or arrest of disease. The advantage of providing a system of medical treatment over leaving the matter to chance is insisted on, and it is stated that 279 local education authorities had such schemes in operation during 1915, either by arrangement with neighbouring hospitals or in the form of school clinics. Dental treatment has been provided by 147 education authorities, and there are 55 whole-time dental officers.

Section IV. treats of the physical education of the child, the four principal means of obtaining this being stated to be: (a) the teaching of hygiene and cleanliness; (b) the feeding of school children; (c) systematic physical training; and (d) open-air education.

Under (a) it is pointed out that in order to inculcate hygienic principles as "a way of life" "there must be appropriate lessons in hygiene, combined with practical work by the children, and supervision of their own personal hygiene by the teacher." Lessons on food and drink and instruction in temperance form part of the scheme.

With regard to (b), the findings of medical inspection indicate that about 10 per cent. of nearly 6,000,000 children attending public elementary schools suffer from malnutrition, and the paramount consideration seems to be that to secure proper physical and mental development the growing child must be sufficiently fed. Questions of ways and means are rather for the public authorities than for the profession, but it may be interesting to note that in the autumn of 1914 no fewer than 195,000 elementary school children were in receipt of free meals, and that their number had declined to 22,615 by July, 1916. Grants made in aid by the Board depend, *inter alia*, upon the extent to which the work is co-ordinated with that of the school medical service, with which it rests to suggest suitable dietary and to watch the effect on the children.

(c) As regards systematic physical training it must be such as to promote the healthy growth and development of the children, without exaggeration or undue strain, the latter being mainly a medical question. The same remark applies to organised games.

(d) Open-air life, wherever and whenever practicable, is referred to by Sir George Newman as "the fourth essential condition of physical education." He describes various modes of securing it, and especially mentions the experimental playground classes and classes held in the public parks—a scheme, by-the-by, advocated by Séguin in New York so long ago as 1877—with much approval, advocating a substantial advance in this direction. It appears that so far only a score of education authorities have established systematic open-air instruction.

Juvenile Employment.

The subject of juvenile employment is discussed in the last section (V.). Owing to existing war conditions this is a somewhat thorny question, but it is the medical aspect that is prominent in Sir George Newman's remarks. It is within the province of the school medical service to consider the physical condition of the child allowed to leave for employment before the age of 14 and to guard him from strain too often involved in labour prematurely undertaken by an immature youth.

The chief medical officer deprecates the growing tendency to excuse from school attendance children not even 12 years of age for employment in agriculture, as it would probably mean the discontinuance of further education. In industrial employment and in munition-making boys of 13 have been allowed to take part, but the Board of Education rightly insist that in these emergency cases it should be ascertained that the employment is of a character suitable to the physical capacity of the boy. In this connexion are printed extracts from a very practical report by Dr. T. Chetwood, school medical officer for Sheffield, in which particulars are given of the children exempted from school in 1915.

In the closing page of his report Sir George Newman insists upon the necessity, in the public interest, of (1) careful

examination of all leavers; (2) prompt and adequate remedy of defects discovered; and (3) close coördination between school medical officer, certifying factory surgeon, and juvenile employment committee. As he truly remarks: "The State cannot be true to its responsibility, unless it is watchful over the child both before it enters school, and after it leaves school."

The last annual report of the chief medical officer of the Board of Education has already been noticed in our columns, and at all points it presents theories and facts worth attention and discussion—it must be read for their appreciation. We congratulate him on the skill with which he has marshalled so considerable a mass of information, valuable alike to the medical profession, the educationist, and the social reformer, within a space less than half that occupied in previous reports.

THE CONTROL OF VENEREAL DISEASES.

Local Government Board Circular.

ON a circular with attached memorandum and forms, dated Dec. 22nd, and addressed to the councils of counties and county boroughs, the secretary of the Local Government Board draws attention to the prescribed records and returns for laboratories and treatment centres. A system of case-papers and registers is submitted for the consideration of hospital authorities. Kharsivan, arsenobillon, and novarsenobillon are mentioned as the salvarsan substitutes at present approved, and the price at which these drugs can be obtained by local authorities has been fixed at 5s. for a dose of 0.6 gm. for kharsivan and arsenobillon, 3s. for the same dose in the case of novarsenobillon, and smaller doses in proportion. A uniform payment of 6d. a packet is suggested to recoup practitioners for out-of-pocket expenses in transmitting specimens to the laboratory. The question of the liability of councils for the cost of treatment of patients at institutions not included in the scheme is also dealt with in the circular.

Progress of County Council Schemes.

Mr. Hayes Fisher informed the House of Commons last week that 34 out of 146 councils had submitted schemes for the approval of the Local Government Board, and in practically every other case the Board had received information that schemes were in preparation. In a large proportion of these cases the negotiations with hospitals and other bodies were nearing completion.

Dr. W. H. Hamer, medical officer of health of London, has issued further details of the scheme which we summarised in THE LANCET of Dec. 2nd (p. 954). A schedule is given of the days and times for attendance at the 22 hospitals (reckoning the male and female departments of the Lock Hospital as two) with which arrangements have been made. In many cases the venereal clinic is open every day, and the times vary from 9 A.M. to 8 P.M., so as to suit every kind of occupation. A series of eight leaflets, authorised by the Local Government Board, accompany the circular, fixing the form of application for pathological outfit or for arsenobenzol, the form of pathological reports, the instructions to be given to patients and the public in regard to personal precautions and the dangers of infection.

The Derbyshire county council is arranging for treatment at the various hospitals in the county and at a clinic to be established at Chinley, boards of guardians to deal with their own cases. Two medical men, Dr. G. K. Smiley and Dr. Albert Green, were co-opted on to the Public Health Committee to assist in administering the scheme. A conference at the Swansea Hospital was recently attended by representatives of the county councils of Brecon, Carmarthen, Glamorgan, Pembroke, and of the Swansea Health Committee. The infirmary board of the North Riding of Yorkshire has expressed its willingness to administer a separate hospital for venereal diseases, but not to provide a clinic. The Portsmouth town council are approaching other councils throughout the country with a view to bringing concerted pressure on the Local Government Board to prohibit the non-medical treatment of venereal diseases.

The Detection and Treatment of Contacts.

Miss Norah March, B.Sc., in describing social service work in Boston, U.S.A., touches upon a point of great practical

importance—viz., the moral obligation of each person infected with venereal disease of any kind to secure the examination and, if need be, treatment of the person from whom the infection was derived or to whom it may have been handed on. Miss March writes: "This would seem perhaps to be a difficult thing to do, less difficult, however, in cases of innocent infection, of which in the syphilis clinic at the Massachusetts General Hospital they have 40 per cent. of their cases, than in cases which involved a personal problem. But a scheme has been launched in one of the institutions which I visited whereby this effort has been attended with very considerable success. The patient, having had the nature of his complaint made clear to him and the possible serious consequences—personal and social—of neglected infection impressed upon him, is supplied with a certain printed form, which carries no name or identification mark upon it. Any person coming to the clinic for examination and presenting one of these forms is accepted for examination without any questions being asked, and is thus relieved of all embarrassment. At the time of my visit the figures given to me were that out of 300 forms which had been so given out, 290 had been returned to the hospital by persons presenting themselves for examination. Education of the public in regard to the nature and the prevalence of syphilis and gonorrhoea is much more widespread than has been achieved in this country so far; there is more alertness in regard to possible infection and more readiness to seek advice in connexion therewith. That will account, in part, for the somewhat surprising considerable response which has attended these efforts of the social service department."

Venereal Disease in Prisons.

In their report for the year 1915-16 (Od. 8342. Wyman and Sons. 2d.) the Commissioners of Prisons correct the inference which might be drawn from the report of the Royal Commission that no action had been taken in prisons to diagnose syphilis and give intravenous treatment. The treatment, they state, is being administered at present in a certain number of prisons, and it is hoped shortly to complete a scheme of collecting all cases suitable to undergo the treatment at certain prisons as centres. The Commissioners welcome the establishment of centres throughout the country where the treatment of short-sentence prisoners can be efficiently continued on discharge, and the admitted evil of their discharge while still in an infectious condition counteracted.

Appointments at Guy's Hospital.

In connexion with the Local Government Board and London County Council schemes the following appointments have been made at Guy's Hospital:—Assistant to the Obstetric Surgeons, Miss Morna Rawlins, M.B., B.S. Lond.; to the Dermatologist, Mr. L. S. Gathergood, M.R.C.S., L.R.C.P.; to the Genito-Urinary Surgeon, Captain G. E. Genge-Andrews, M.B., B.S. Lond.; Assistant Bacteriologist: Miss Una Griffin, M.B., B.S. Lond.

THE POSITION OF DISCHARGED SOLDIERS UNDER THE NATIONAL INSURANCE ACTS.

Memorandum 228/I.O. issued by the Insurance Commissioners (England, Scotland, and Wales) calls the attention of Approved Societies to the notifications which they are required to send to Insurance Committees of changes affecting the Committees' Index Registers; and Circular 55/I.O. is a memorandum addressed to Insurance Committees explaining their duties with regard to the completion of their registers upon receipt of the necessary materials from the societies or from those who are not members of societies. Stress is laid upon the importance of dealing with the whole matter as urgently important and of following exactly the instructions given. The accuracy and completeness of the lists of the Insurance Committees and of the societies is naturally of the first interest to medical men on the panels, but the circulars mainly concern the bodies to which they are directed; the responsibility for carrying out the instructions is laid upon the societies, and they will be sufferers, as well as the members of the medical profession and their patients, if confusion prevails. At the same time, no doubt, the depletion of their clerical staffs will render their task difficult.

To medical men on the panels perusal of the two documents referred to will bring home the complicated nature of the task of reorganising during the war, as well as the altered circumstances of panel practice. The correction of lists in connexion with the removal from the registers of index slips relating to suspended persons, many of whom have enlisted, is conducted under a modified procedure instituted with a view of reducing the work. The reinstatement of persons coming back into insurance in order that they may obtain medical benefit, means for medical practitioners the duty of attending a growing number of patients who have been discharged from the Army as medically unfit. It will be observed that the insurance committees have to deal with two main classes of insured persons seeking reinstatement—those who are members of societies, and those who are not—and that various conditions may affect the position of members of either class. Among those who are not members of societies, for example, there will be some who have been discharged from the Army as medically unfit, and who have been insured during service. These will be entitled to admission to benefits from the Navy and Army Insurance Fund, and arrangements are to be made at once for their medical benefit; a form forwarded to the Commissioners at Maida Hill, who have the care of deposit contributors, is marked "Medical card issued." What relation the number of these will bear to those not discharged upon medical grounds is not, of course, indicated, but the medical profession will regret that in the case of these men, who may be expected to need medical care less frequently in the future as well as less urgently, a longer procedure is necessary, varying according to circumstances. A man who has been a deposit contributor before enlistment will, indeed, be ordinarily entitled to medical benefit at once, but the form forwarded on his behalf to Maida Hill will be marked "Medical card not issued," and his claim will be investigated in that department. On the other hand, a man who has only been insured when in the Army will also be dependent upon the decision of the Commissioners at Maida Hill, and in any case will have to wait three months before being entitled to the modified benefits provided for a deposit contributor. It is advised that to such men the advantages of joining an Approved Society at once, and of so securing medical benefit without further delay, should be explained when they apply to an Insurance Committee.

Experience alone will show how far the reconstruction of financial arrangements between the Insurance Committees and the medical profession will be necessitated by altered circumstances brought about by war.

THE SERVICES.

COMMISSIONS IN THE INDIAN MEDICAL SERVICE.

It has been already announced in THE LANCET that after the open competitive examination held last July for admission to the Indian Medical Service no similar examination would be held during the continuance of the war, but that such appointments as might be required to meet the absolutely indispensable needs of the service would be made by nomination by the Secretary of State. To assist him in making these appointments, which will be limited in number to the needs of the service, Mr. Chamberlain has appointed a Selection Committee who will interview such applicants as may appear to be suitable, and make recommendations accordingly. Applications for appointment should be addressed to the Secretary of the Military Department, India Office, Whitehall, S.W., and should contain concise particulars of the medical degrees and career of the candidates, who must be over 21 and under 32 years of age at the time of application. Particulars regarding pay, promotion, and conditions of service can be obtained from the Secretary, Military Department.

ARMY MEDICAL SERVICE.

Col. C. E. Faunce is retained on the Active List.

ROYAL ARMY MEDICAL CORPS.

J. Baker to be temporary Honorary Major whilst employed at the Crowthorne War Hospital.

H. P. Foulerton to be temporary Honorary Captain whilst employed at the Crowthorne War Hospital.

Temp. Lieuts. to be temporary Captains: A. G. Henderson, W. B. Walker, F. de C. Keogh, W. Gemmill, T. W. Melhuish, H. Whitehead, J. W. McDonald, P. Lornie, M. W. Baker, O. W. Bateman, C. S. Wynne, A. F. Laird, W. G. Silvester, W. Bannerman, H. P. Gibb, J. R. Craig, T. C. Harte, B. E. Spurgin, W. Stirling, J. G. Gray, R. H. Bremridge, R. H. Urwick, A. E. Fiddian, W. M. Penny, W. E. Barker, H. R. S. Walford, R. J. Vernon, A. J. Beadel, J. A. Lowry, A. Campbell, J. C. Padwick, A. W. Senior, W. W. Stacey, L. M. Smith, G. B. Buckley, P. Verdon, P. L. Moore, C. C. Twort, A. G. Peter, A. W. Wilcox, G. D. E. Tullis, W. Crabtree, J. W. Tocher, J. R. Rees, J. A. Marsden, W. J. Edgar, H. Hargreaves, A. Davidson, H. E. Dyson, F. P. Young, E. Hesterlow, A. L. McCreery, H. O. Gough, J. D. Cooke, G. H. Simpson, W. B. Tannahill, K. Pretty, T. S. Brook, J. A. Harper, C. H. Mossop, J. N. J. Hartley, B. P. Campbell, C. G. H. Campbell, C. B. Jones, R. Sinclair, M. W. Talbot, R. C. J. Stevens, F. W. Bartlett, P. Davies, C. Berry, F. H. Young, A. P. Fry, E. Purcell, R. C. Lowe, J. A. Venning, H. Mather, J. C. Wilson, J. C. Wadmore, G. B. Salmond, D. C. Adam, P. D. Scott, W. B. Loveless, G. Ellis, C. J. Pentland, T. J. Lloyd, V. K. Sadler, D. I. Anderson, W. T. Brown, E. R. Grieverson, W. J. Spearing, H. J. Keane, C. W. J. Dunlop, E. W. Kirk, R. M. Lang, R. C. Cooke, J. W. Harvey, R. S. Harvey, F. C. Drew, D. K. Parkes, W. Craig, J. F. Adamson, M. H. Cane, R. Paul, C. M. Roberts, J. Bain, H. K. Kirkland-Whittaker, and J. G. Copeland.

Late temp. Lieuts., R.A.M.C., to be temporary Captains: L. M. Morton, C.A.M.C., and O. G. Donovan, C.A.M.C.

To be temporary Captains: A. K. H. Pollock, J. G. Taylor, W. G. Heasman, late Surgeon-Captain, Royal Berks Regiment, S. E. Denyer, C.M.G., and M. Murphy, late temporary Captain, R.A.M.C.

To be temporary Lieutenants: G. O'Neill Waddington, B. Cohen, B. Knowles, H. D. Wilson, F. A. Godson, E. W. Hall, W. W. D. Thomson, F. A. Faulkner, A. W. G. Murray, J. J. O'Mullane, W. M. G. Guinness, B. G. H. Connolly, C. L. Warke, G. Gordon, J. Carrick, G. A. Mavor, R. C. Rogers, H. W. Windsor-Aubrey, M. H. Bland, W. Daunt, D. Finlayson, C. Speers, R. A. Hosegood, J. S. Bellas, W. M. Christie, H. W. Bernard, T. M. Thomson, T. M. Guthrie, J. A. Berlyn, B. Muir, J. D. Gray, F. Liley, J. R. Sinton, F. W. Cheese, J. P. Fehily, T. McC. Sellar, C. H. Burgess, H. L. Sinclair, B. Baylor, T. E. Adams, H. F. Sheldon, T. R. Robertson, J. A. Mollroy, H. A. Grierson, A. E. Hart, A. Newton-Brady, G. H. Adam, and W. E. Ord.

Temp. Major A. W. May relinquishes his commission.

Temp. Capts. relinquishing their commissions: G. E. Vilvandre, C. L. Graham, S. Jacob, F. W. Milne, H. Mowat, C. Weller, T. S. G. Martin, C. Powell, G. Norman, A. E. Cotterill, J. McManus, S. McM. McLay, A. L. McLean, A. T. Smith, W. P. H. Munden, and T. Grimson.

Temp. Lieuts. relinquishing their commissions: L. M. Morton, J. B. Wilman, F. H. Lawson, T. McG. Fletcher, S. Simons, A. L. Vaughan, D. J. Guthrie, A. W. S. McComiskey, P. J. Verrall, J. T. Reardon, J. Honeyford, R. T. MacLaren, W. E. Plummer, R. Roberts, A. B. Pugh, J. R. Elwood, H. F. Williams, F. W. Daniels, E. Sutcliffe, J. Unsworth, R. B. Austin, S. B. Legge, H. P. Thompson, G. C. McIntyre, M. E. Embree, C. L. Gass, W. W. Cruise, H. A. Jones, J. G. Cunningham, A. W. Nixon, and A. B. Tucker.

SPECIAL RESERVE OF OFFICERS.

Temp. Lieut. J. Eric Cheeseman, from R.A.M.C., to be Captain.

TERRITORIAL FORCE.

Lieut. V. T. Ellwood to be Captain.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The December issue of this journal, which closes Vol. XXVII., contains a useful article on the Determination of Sugar in the Blood, by Captain Charles G. L. Wolf and Walter C. Ball, Sc.D., the authors believing that "the accurate determination of the concentration of sugar in the blood would assist in the differential diagnosis of certain conditions brought about by exposure to great mental excitement." Honorary and Temporary Lieutenant-Colonel Sir John Collie writes on the Examination of the Back in Cases of Injuries, which "appear to be uninteresting to everyone except those who suffer, and who have to pay,.....they are usually relegated to the care of the junior....."; but, "as a matter of fact, there is quite a fascinating interest in tracing an inadequately defined pain to its true source, or proving its non-existence." Other articles are: On Some Cases of Abdominal Injury Treated at the Front, written by Captain E. H. Udall in conjunction with Captain W. C. Horton; and Observations on the Serum Reactions of 300 Unselected Cases of "Enteric" from the Eastern Mediterranean with the Oxford Standard Agglutinable Cultures, by Captain Ernest Glynn and Dr. E. Cronin Lowe.

¹ Vide THE LANCET, 1916, II., 222.

VITAL STATISTICS.

VITAL STATISTICS OF LONDON DURING NOVEMBER, 1916.

IN the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the 10 diseases specified in the table was equal to an annual rate of 5.0 per 1000 of the population, estimated at 4,310,030 persons in the middle of the year; in the three preceding months the rates were 4.0, 4.9, and 5.4 per 1000. The lowest rates last month were recorded in Kensington, the City of Westminster, St. Marylebone, the City of London, and Hampstead; the highest rates were recorded in St. Pancras, Shoreditch, Bethnal Green, Stepney, Southwark, Deptford, and Greenwich. The prevalence of scarlet fever showed a slight decline last month; among the various metropolitan boroughs the greatest proportional prevalence of this disease was recorded in Chelsea, Shoreditch, Bethnal Green, Stepney, Poplar, Battersea, and Wandsworth. The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals, which had been 1007 and 1117 at the end of the two preceding months, had declined again to 1066 at the end of last month; the weekly admissions averaged 131, against 143 and 160 in the two preceding months. Diphtheria was more prevalent than it had been in the preceding month; this disease was proportionately most prevalent in Stoke Newington, Shoreditch, Bethnal Green, Stepney, Southwark, Deptford, and Greenwich. The Metropolitan Asylums Hospitals contained 1543 diphtheria patients at the end of last month, against 1256, 1287, and 1479 at the end of the three preceding months; the weekly admissions averaged 187, against 135, 167, and 209 in the three preceding months. The prevalence of enteric fever showed very little variation from that recorded in the previous month; of the 55 cases notified during November, 15 belonged to St. Pancras, 5 to Stepney, 4 each to

Kensington, Hackney, and Shoreditch, and 3 each to Paddington, Islington, and Wandsworth. There were 42 enteric fever patients under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 35 and 39 at the end of the two preceding months; the weekly admissions averaged 7 in each of the last three months. Erysipelas was proportionately most prevalent in Finsbury, Bethnal Green, Southwark, and Camberwell. The 21 cases of puerperal fever notified during the month included 3 in Wandsworth and 2 each in the City of Westminster, Bethnal Green, Stepney, Poplar, Lambeth, and Lewisham. The 23 cases of cerebro-spinal meningitis included 4 each in Hackney and Wandsworth, 3 in St. Pancras, and 2 in Lewisham; and the 26 cases of poliomyelitis included 3 each in Southwark, Wandsworth, and Camberwell, and 2 each in Fulham, Hackney, Stepney, and Bermondsey.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several metropolitan boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the five weeks ending Dec. 2nd the deaths of 6013 London residents were registered, equal to an annual rate of 14.5 per 1000, the rate in each of the two preceding months having been 12.0 per 1000. The death-rates last month ranged from 10.1 in Hampstead, 10.8 in Lewisham, 11.8 in Wandsworth, 12.4 in Battersea, and 12.6 in Woolwich, to 17.0 in Bethnal Green, 17.4 in Shoreditch, 18.2 in Finsbury, 18.3 in Holborn, 18.9 in Southwark, and 19.3 in Bermondsey. The 6013 deaths from all causes included 291 which were referred to the principal infectious diseases; of these, 53 resulted from measles, 6 from scarlet fever, 63 from diphtheria, 5 from whooping-cough, 8 from enteric fever, and 156 from diarrhoea and enteritis among children under 2 years of age. No death from any of these diseases was recorded last month in Chelsea, Hampstead, or the City of London; among the other boroughs they caused the lowest death-rates in Kensington, the City of Westminster, and Wandsworth, and the highest rates in Paddington, Shoreditch, Bethnal Green, Poplar, Southwark, Bermondsey, and Greenwich. The 53 fatal cases of measles were 74 fewer than the

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING NOVEMBER, 1916.

(Specially compiled for THE LANCET.)

| CITIES AND BOROUGHES. | Estimated civil population, 1915. | NOTIFIED CASES OF INFECTIOUS DISEASE. | | | | | | | | | | | DEATHS FROM PRINCIPAL INFECTIOUS DISEASES. | | | | | | | | | | | Deaths from all causes. | Death-rate per 1000 living. |
|-------------------------|-----------------------------------|---------------------------------------|----------------|--------------|---------------|----------------|-------------------------|------------------|-------------|----------------------------|----------------|--------|--|------------|----------|----------------|--------------|-----------------|----------------|--|--------|--------------------------------------|------|-------------------------|-----------------------------|
| | | Small-pox. | Scarlet fever. | Diphtheria.* | Typhus fever. | Enteric fever. | Other continued fevers. | Puerperal fever. | Erysipelas. | Cerebro-spinal meningitis. | Poliomyelitis. | Total. | Annual rate per 1000 persons living. | Small-pox. | Measles. | Scarlet fever. | Diphtheria.* | Whooping-cough. | Enteric fever. | Diarrhoea and enteritis (under 2 years). | Total. | Annual rate per 1000 persons living. | | | |
| LONDON... .. | 4,310,030 | — | 709 | 951 | — | 55 | 7 | 21 | 238 | 23 | 26 | 2050 | 5.0 | — | 53 | 6 | 63 | 5 | 8 | 156 | 291 | 0.7 | 6013 | 14.5 | |
| West Districts. | | | | | | | | | | | | | | | | | | | | | | | | | |
| Paddington | 131,397 | — | 12 | 22 | — | 3 | — | 1 | 6 | — | — | 44 | 3.5 | — | — | — | — | — | — | 12 | 12 | 1.0 | 198 | 15.7 | |
| Kensington | 155,795 | — | 19 | 15 | — | 4 | — | — | 4 | 1 | — | 43 | 2.9 | — | — | — | 2 | — | — | 3 | 5 | 0.3 | 222 | 14.9 | |
| Hammersmith | 118,559 | — | 17 | 30 | — | 1 | — | — | 7 | — | 1 | 56 | 4.9 | — | — | — | 1 | — | — | 3 | 4 | 0.4 | 161 | 14.2 | |
| Fulham | 151,161 | — | 23 | 38 | — | 1 | — | 1 | 7 | — | 2 | 75 | 5.2 | — | — | — | 5 | — | — | 6 | 11 | 0.8 | 189 | 13.0 | |
| Chelsea | 58,421 | — | 15 | 4 | — | — | — | — | 2 | — | 1 | 22 | 3.9 | — | — | — | — | — | — | 1 | — | — | 86 | 15.4 | |
| City of Westminster ... | 135,104 | — | 17 | 13 | — | 1 | — | 2 | 4 | 1 | — | 38 | 2.9 | — | 1 | — | 2 | — | — | 1 | 4 | 0.3 | 181 | 14.0 | |
| North Districts. | | | | | | | | | | | | | | | | | | | | | | | | | |
| St. Marylebone | 100,260 | — | 8 | 14 | — | 1 | — | — | 4 | — | — | 27 | 2.8 | — | — | — | — | — | — | 5 | 6 | 0.6 | 145 | 15.1 | |
| Hampstead | 81,767 | — | 11 | 10 | — | — | — | — | 4 | — | — | 25 | 3.2 | — | — | — | — | — | — | 3 | 9 | — | 79 | 10.1 | |
| St. Pancras | 201,322 | — | 29 | 53 | — | 15 | — | — | 10 | 3 | 1 | 111 | 5.8 | — | 2 | — | 3 | — | — | 11 | 9 | 0.5 | 295 | 15.4 | |
| Islington | 316,242 | — | 47 | 61 | — | 3 | — | 1 | 15 | 1 | 1 | 123 | 4.3 | — | 1 | 1 | 8 | 1 | 3 | 11 | 23 | 0.8 | 451 | 14.9 | |
| Stoke Newington | 50,527 | — | 6 | 17 | — | — | — | — | 1 | — | — | 21 | 5.0 | — | — | — | — | — | — | 2 | 2 | 0.4 | 62 | 12.8 | |
| Hackney | 217,883 | — | 36 | 38 | — | 4 | 1 | — | 13 | 4 | 2 | 93 | 4.7 | — | 1 | 2 | 3 | — | — | 2 | 8 | 0.4 | 296 | 14.2 | |
| Central Districts. | | | | | | | | | | | | | | | | | | | | | | | | | |
| Holborn | 41,405 | — | 4 | 10 | — | 2 | — | — | 1 | — | — | 17 | 4.4 | — | — | — | 2 | — | — | 1 | 3 | 0.8 | 71 | 18.3 | |
| Finsbury | 76,915 | — | 7 | 16 | — | — | — | — | 10 | — | 1 | 31 | 4.6 | — | — | — | 1 | — | — | 4 | 5 | 0.7 | 134 | 18.2 | |
| City of London | 19,461 | — | 1 | 2 | — | — | — | — | — | — | — | 3 | 1.6 | — | — | — | — | — | — | — | — | — | 25 | 13.4 | |
| East Districts. | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shoreditch | 103,627 | — | 31 | 31 | — | 4 | 5 | 1 | 5 | — | — | 76 | 7.6 | — | — | — | — | — | 3 | 14 | 17 | 1.7 | 173 | 17.4 | |
| Bethnal Green | 120,207 | — | 31 | 37 | — | — | — | 2 | 20 | 1 | 2 | 93 | 7.8 | — | 4 | — | 2 | — | — | 9 | 15 | 1.3 | 196 | 17.0 | |
| Stepney | 265,731 | — | 65 | 103 | — | 5 | — | 2 | 23 | 1 | 2 | 201 | 7.9 | — | 2 | 1 | 3 | 1 | — | 12 | 19 | 0.7 | 347 | 13.6 | |
| Poplar | 156,247 | — | 32 | 27 | — | 1 | — | 2 | 10 | 1 | 1 | 74 | 4.9 | — | 5 | 1 | 2 | 1 | — | 8 | 17 | 1.1 | 233 | 15.6 | |
| South Districts. | | | | | | | | | | | | | | | | | | | | | | | | | |
| Southwark | 179,424 | — | 23 | 52 | — | — | — | — | 19 | 1 | 3 | 100 | 5.8 | — | 7 | — | 3 | 1 | — | 7 | 18 | 1.0 | 326 | 18.9 | |
| Bermondsey | 117,188 | — | 21 | 26 | — | 1 | — | — | 6 | 2 | 2 | 55 | 4.9 | — | 7 | — | 4 | — | — | 4 | 15 | 1.3 | 217 | 19.3 | |
| Lambeth | 284,188 | — | 40 | 40 | — | 1 | — | 2 | 12 | 1 | 1 | 97 | 3.6 | — | 2 | — | 6 | — | — | 15 | 23 | 0.8 | 460 | 16.9 | |
| Battersea | 161,946 | — | 32 | 25 | — | 2 | — | — | 8 | 1 | 1 | 69 | 4.4 | — | 3 | — | — | — | 1 | 4 | 8 | 0.5 | 193 | 12.4 | |
| Wandsworth | 312,249 | — | 63 | 43 | — | 3 | 1 | 3 | 16 | 4 | 3 | 136 | 4.5 | — | — | — | 4 | 1 | — | 5 | 10 | 0.3 | 304 | 11.8 | |
| Camberwell | 254,385 | — | 45 | 39 | — | — | — | 1 | 21 | 1 | 3 | 113 | 4.6 | — | 4 | 1 | 3 | — | — | 12 | 20 | 0.8 | 311 | 12.7 | |
| Deptford | 110,299 | — | 20 | 34 | — | — | — | — | 7 | — | — | 61 | 5.8 | — | 1 | — | 3 | — | — | 3 | 7 | 0.7 | 150 | 14.2 | |
| Greenwich | 96,385 | — | 14 | 85 | — | 2 | — | — | 3 | 1 | — | 105 | 11.4 | — | 5 | — | 2 | — | — | 4 | 11 | 1.2 | 132 | 14.3 | |
| Lewisham | 164,438 | — | 21 | 36 | — | 1 | — | 2 | 9 | 2 | 1 | 72 | 4.6 | — | 5 | — | 2 | — | — | 3 | 10 | 0.6 | 170 | 10.8 | |
| Woolwich | 129,505 | — | 15 | 31 | — | — | — | 1 | 8 | — | — | 55 | 4.4 | — | 3 | — | 1 | — | — | 3 | 7 | 0.6 | 156 | 12.6 | |
| Port of London | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | |

* Including membranous croup.

corrected average number in the corresponding period of the five preceding years; this disease was proportionally most fatal last month in Bethnal Green, Poplar, Southwark, Bermondsey, and Greenwich. The 6 deaths from scarlet fever were only one-fifth of the corrected average number, and included 2 in Hackney and 1 each in Islington, Stepney, Poplar, and Camberwell. The 63 fatal cases of diphtheria were 10 fewer than the corrected average number; the greatest proportional mortality from this disease occurred in Fulham, Holborn, Bermondsey, and Deptford. The 5 deaths from whooping-cough were 42 below the average, and belonged respectively to Islington, Stepney, Poplar, Southwark, and Wandsworth. The 8 fatal cases of enteric fever showed a decline of 4 from the corrected average, and included 3 each in Islington and Shoreditch, and 1 each in St. Pancras and Battersea. The 156 deaths from diarrhoea and enteritis among children under 2 years of age were 31 below the average; the greatest proportional mortality from this cause was recorded in Paddington, St. Marylebone, Finsbury, Shoreditch, Bethnal Green, Poplar, and Lambeth. In conclusion, it may be stated that the aggregate mortality in London last month from these principal infectious diseases was 39.0 per cent. below the average.

Correspondence.

"Audi alteram partem."

OBSERVATIONS ON THE ANTISEPTIC TREATMENT OF WOUNDS.

To the Editor of THE LANCET.

SIR,—In your issue of Dec. 23rd the use of a camphor-carbolic mixture as a disinfectant of projectile wounds is advocated by Mr. I. Feldman and Captain A. J. Walton in their communication on "Observations on the Antiseptic Treatment of Wounds," and at first sight, to judge by their results, they appear to have established their case. As I have recently completed a paper dealing with the principles of treatment of wound infections, which I hope will be published shortly, I do not wish to occupy your space at length, but confine myself to a few comments.

In November, 1914, I went out to France with Colonel H. M. W. Gray and commenced work on war surgery there with him, and it is interesting to record that camphor-carbolic was the first antiseptic which we employed in wound treatment. I feel sure that I am not misrepresenting the views then held by Colonel Gray when I say that he started work in France with a bias in favour of camphor-carbolic, anticipating great things, as he had previously obtained excellent results from it in civil practice. On his recommendation I adopted it, and we both used it extensively at first. Not being impressed with the results, I tried several variations and changes—equal parts of camphor-carbolic and tinct. iodi, pure carbolic acid, equal parts of carbolic acid and tinct. iodi, pure tinct. iodi, liquor iodi fort.—and in a comparatively short time Colonel Gray and I both came to the conclusion that it was a matter of indifference what antiseptic one employed in the wound, so far as the control of infection was concerned—nay, more, that the use of antiseptics did not appreciably affect the course or duration of the infection. I am still of this opinion, in spite of various new antiseptics recommended and tried, and I have long since abandoned their use in wound treatment as a means of controlling infection.

Efficient and adequate *mechanical* drainage is, I believe, the one and only secret of success in dealing with infection, and for nearly two years I have held the view that once proper drainage is established it is a matter of indifference whether one employs antiseptics or concentrated saline solutions. So far as I have been able to determine by careful observation, the use of either does not appreciably affect the course of infection, and their values are certainly so subsidiary as to be negligible. With good mechanical drainage they are unnecessary; without it they are useless.

Certain passages in Mr. Feldman and Captain Walton's paper appear to me to support this view, and I believe they indicate the factor to which their improved results are due:—

"As is the case when using any other application, it is primarily essential to provide adequate drainage." "When the treatment is commenced some days or weeks after the

infliction of the wound, it is again necessary to open up all sinuses and pockets so that the fluid may reach all the septic areas, and, if necessary, tubes should be inserted so that free drainage is established." "..... and we have frequently noticed that, if there is a pocket of pus undrained into which the antiseptic does not enter, the surface will not dry. Such a condition is an indication for further drainage." "It will be noticed that several of our cases continued to have a large amount of discharge until more free drainage was provided, after which it rapidly ceased."

The authors here clearly recognise that without adequate drainage camphor-carbolic is worthless.

In their "control cases" a death-rate of 10 per cent. and an amputation-rate of 20 per cent. are inexplicable to me, except on the supposition that drainage was most inadequate, no matter what local therapies were employed. Presumably these were their earlier cases, and doubtless their methods of drainage, like those of others, have improved with increased experience.—I am, Sir, yours faithfully,

WILLIAM PEARSON, F.R.C.S. Irel.,

Chichester, Dec. 24th, 1916.

Major, R.A.M.C. (Temp.).

MOBILISATION OF THE MEDICAL PROFESSION.

To the Editor of THE LANCET.

SIR,—I do not propose to argue with either of your correspondents on this subject in your last issue, neither have I the intention of leading any "crusade." No doubt the number of medical practitioners required by the Government for war purposes must be obtained, and the only question at issue is, how is this to be done? The needs of the Government may be met in two ways: either by special legislation putting obligations on medical practitioners not shared by the rest of the community, or by general enactments binding on all British subjects. That is what our profession has to consider, and if your correspondents think there is nothing derogatory to the "honour and dignity" of the profession in the compulsory "deportation" of civilian doctors from their homes and practices—not to attend to soldiers, but to take charge of other practices—when it would be illegal to enforce such "deportation" in the case of other British subjects, I do not agree with them. It seems to me that "the honour and dignity of the profession" is very much implicated in upholding our rights, not only as medical practitioners, but as British subjects. We are as desirous to win the war as any class of the community, but we may fairly claim to be subject only to those laws that are binding on the rest of the nation, and I regret exceedingly that they consider it dishonourable to "protest strongly" against our profession being put outside the protection of the law relating to all other British subjects.

I am, Sir, yours faithfully,

Hackney-road, N.E., Dec. 23rd, 1916.

MAJOR GREENWOOD.

Obituary.

THOMAS BARR, M.D., C.M. GLASG., F.F.P.S. GLASG.,
SURGEON, GLASGOW HOSPITAL FOR DISEASES OF EAR, NOSE, AND THROAT;
LECTURER ON AURAL SURGERY, UNIVERSITY OF GLASGOW.

OF the numerous friends of Dr. Thomas Barr, of Glasgow, only a limited number were aware that he had been lying seriously ill at his residence during the past few weeks.

Thomas Barr was born at Elderslie, Renfrewshire, in 1846, and graduated as a Bachelor of Medicine and Master of Surgery, with highest honours, at Glasgow University in 1868, receiving in 1870 the M.D. degree. During the years 1865-67 he had the good fortune to study under Lister at a time when that great master was initiating the principles of antiseptic surgery, and on many occasions he was heard to say how mentally invigorated he had been by watching the evolution of Lister's laborious efforts.

After having been engaged in general practice for a period of nine years, Barr turned his attention to otology, and studied under such distinguished exponents of the art as Professors Politzer, Gruber, Schrötter, and Urbantschitsch in Vienna. He was duly appointed dispensary surgeon for diseases of the ear in the Glasgow Western Infirmary, a position which he held for 38 years. During this

long period he conducted with great regularity and success the classes on otology for the University students. In 1879 he was appointed lecturer on aural surgery in Anderson's College Medical School, a position he held for 16 years, when he was appointed lecturer on diseases of the ear in the University of Glasgow. In addition he held the post of honorary aurist to the Glasgow Sick Children's Hospital from 1879 (the date of the opening of this institution) until 1914, a period of 35 years. In 1884 he was appointed aural surgeon to the Glasgow Ear Hospital, now the Glasgow Hospital for Diseases of the Ear, Nose, and Throat, a post which he resigned only a short time ago. In 1895 the University of Glasgow instituted a lectureship on diseases of the ear, to which he was at once appointed and where he conducted large and successful classes. For a period, therefore, of nearly 40 years Barr regularly taught otology, keeping himself abreast of all the modern improvements and discoveries in this rapidly advancing branch of the healing art. His reputation as an aurist is evidenced from the fact that he acted as President of the Otological Section of the British Medical Association at its meeting in Glasgow in 1888, as President of the Otological Society of the United Kingdom during the years 1903-1905, as President of the Glasgow Pathological and Clinical Society in 1899-1901, and as President of the Scottish Otological and Laryngological Society at its meeting in Glasgow in 1911. He was one of the Vice-Presidents of the Otological Section of the International Medical Congress held in London in 1913. His most important literary work was his well-known "Manual of Diseases of the Ear for the Use of Students and Practitioners," the first edition being published in 1884 and the fourth in 1909. In the preparation of the last edition he was ably assisted by his only son, Dr J. Stoddart Barr, whose painful and prolonged illness was a great blow to the devoted father. Seldom, indeed, has it been given to father and son to have more cordial, sympathetic, and intimate interests in life.

"Possessed of a peculiarly lovable temperament," writes one of his personal friends, "Barr gathered around himself many friends, to whom he was an inspiration and a true helper in times of doubt and difficulty. His hearty handshake, his genial laugh, and his never-failing urbanity will long be remembered and cherished by those who had the privilege of his intimate friendship. Those who had the good fortune to know him this way will never forget his sunny disposition and his boyish enthusiasm, not only in things otological but in everything pertaining to the advancement of the profession to which he was so devotedly attached. Possessing, as he did, a kindly and domesticated nature, he was happy in his home and in his family circle, and there sought and found rest after his daily labours. By his death the profession have lost a large-hearted, generous, and wholly lovable colleague."

THE LATE MR. JOHN EWENS.—Mr. J. Ewens L.R.C.P. Lond., L.R.C.S. Edin., L.S.A., consulting surgeon to the Royal Hospital for Sick Children and Women, Bristol, died at his residence, at Clifton, on Dec. 14th, aged 86 years. The deceased received his medical education at St. George's Hospital; after qualifying he practised for a few years at Milton Abbas, Dorset, where he was on the honorary staff of the local cottage hospital. He then went to Bristol, where he was elected on the honorary surgical staff of the Children's Hospital. He practised for many years in Bristol and Clifton, but had retired for some time from active work. Mr. Ewens was held in high esteem, and by his death an old and much respected member of the medical profession has been removed from Bristol.

WE regret to announce the death, in his eightieth year, of Dr. James Little, Regius Professor of Physic in the University of Dublin and a past President of the Royal College of Physicians of Ireland.

LONDON SCHOOL OF TROPICAL MEDICINE.—The following candidates passed the examination of this school at the termination of the fifty-second session (October-December, 1916):—R. D. Sabnis, W. S. Sharpe (Lieutenant-Colonel, R.A.M.C.), L. D. Parsons (Ceylon Medical Service), G. H. Dart, Fred. Barretto, and H. E. Ekanayake (Ceylon Medical Service).

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Died of Wounds.

Capt. C. K. McKerrrow, R.A.M.C., was educated at Charterhouse and at Cambridge, and qualified in 1908. After holding appointments at St. George's Hospital, London, and at the Women's Hospital, Vienna, he practised at Ayr, in Scotland, and joined the R.A.M.C. soon after the outbreak of war. He was promoted Captain in June of this year.

Lieut. E. Howe, R.A.M.C., graduated at Manchester University in 1909. He held an appointment at the Manchester Royal Infirmary, and afterwards was in practice at Hazel Grove, Stockport. He joined the R.A.M.C. in October last.

Wounded.

Capt. D. V. M. Adams, R.A.M.C., attached Gloucester Regiment.

Capt. W. D. Reid, R.A.M.C., attached Manchester Regiment.

Capt. C. M. Geddie, R.A.M.C., attached Gloucester Regiment.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Lieut. A. H. Cheetham, Duke of Wellington's Regiment, younger son of Dr. W. H. Cheetham, of Guiseley, Yorkshire, county medical officer of the North Riding.

Second Lieut. R. B. W. Vinter, M.C., Worcestershire Regiment, elder son of Capt. S. G. Vinter, R.A.M.C., of Torpoint, Cornwall.

Lieut. R. Underhill, Middlesex Regiment, eldest son of Dr. F. T. Underhill, medical officer of health, Vancouver, British Columbia.

Capt. C. K. McKerrrow, R.A.M.C., eldest son of the late Dr. G. McKerrrow, of Ayr, Scotland.

Lieut. J. M. T. Stock, East Lancashire Regiment, younger son of the late Lieut.-Col. J. N. Stock, R.A.M.C., formerly of Cheltenham.

THE HONOURS LIST.

THE following awards to medical officers are announced:—

Military Cross.

Temp. Capt. Walter Eustace Adam, R.A.M.C.

For conspicuous gallantry and devotion to duty. He displayed great courage and determination in dressing and evacuating wounded under heavy fire.

Temp. Capt. Henry St. Arnaud Agate, R.A.M.C.

For conspicuous gallantry and devotion to duty. He attended to men who had been buried under intense fire. On another occasion he dressed the wounded of two battalions, working continuously for 17 hours under fire.

Capt. Robert Burgess, R.A.M.C.

For conspicuous gallantry and devotion to duty. He worked at the advanced dressing-station continuously for 72 hours, exposing himself fearlessly, and, although wounded, refused to be relieved and remained at duty.

Capt. William Hunt, R.A.M.C.

For conspicuous gallantry and devotion to duty. He extinguished a fire in a bomb store at great personal risk, removing two boxes of burning bombs and undoubtedly saving many lives.

Temp. Lieut. John Woollaston Wayte, R.A.M.C.

For conspicuous gallantry and devotion to duty. He organised and led stretcher parties under intense fire. On several occasions he rescued wounded men in the open by carrying them on his back. He has previously done fine work.

Capt. George Garret Greer, Canadian A.M.C.

For conspicuous gallantry and devotion to duty. He tended and dressed the wounded for two hours in the open under intense fire. Later, he worked continuously for 48 hours, and by his courage and devotion to duty was a splendid example to his men.

Bar to Military Cross.

Temp. Capt. David Duncan Craig, M.C., R.A.M.C.

For conspicuous gallantry and devotion to duty. He tended throughout the operations with great courage and skill, frequently passing through enemy barrages and going into the open. He set a splendid example. (The award of the Military Cross was recorded in THE LANCET of June 26th, 1915.)

Temp. Capt. Ivan Clarkson Maclean, M.C., R.A.M.C.

For conspicuous gallantry and devotion to duty. He tended and dressed the wounded continuously throughout the operations under very heavy fire, displaying great courage and determination. (The award of the Military Cross was recorded in THE LANCET of June 26th, 1915.)

Also the following for services in Mesopotamia:—

C.B.—Lieut.-Col. G. B. Irvine, I.M.S.
C.M.G.—Col. A. E. Tate, A.M.S.
C.I.E.—Major W. Gillitt, I.M.S.
Brevet-Col.—Lieut.-Col. (temp. Col.) D. J. Collins, R.A.M.C.
Brevet-Lieut.-Col.—Major J. H. Crossley, R.A.M.C.; Major J. G. Footer, R.A.M.C.; Major C. M. Goodbody, D.S.O., I.M.S.; Major J. H. Morton, D.S.O., I.M.S.
Brevet-Major.—Capt. F. T. Dowling, R.A.M.C.; Capt. T. J. Mitchell, R.A.M.C.
D.S.O.—Capt. W. H. Hamilton, I.M.S.; Capt. R. de S. B. Herrick, I.M.S.; Major R. Kelsall, I.M.S.; Temp. Capt. A. N. Minns, R.A.M.C.; Capt. R. Sweet, I.M.S.
Military Cross.—Temp. Capt. R. M. Allan, R.A.M.C.; Capt. D. V. O. FitzGerald, I.M.S.; Capt. H. L. Garson, R.A.M.C. (Spec. Res.); Capt. A. Glen, R.A.M.C. (Spec. Res.); Capt. E. S. Goss, I.M.S.; Capt. J. H. Hislop, I.M.S.; Temp. Lieut. W. G. MacDonald, R.A.M.C.; Capt. R. F. D. MacGregor, I.M.S.; Capt. W. H. O'Riordan, R.A.M.C.; Capt. D. H. Rai, I.M.S.; Capt. H. K. Rowntree, I.M.S.; Capt. Jyoti Lal Sen, I.M.S.; Temp. Lieut. Sunder Das Sondhi, I.M.S.; Temp. Lieut. J. B. Thackeray, R.A.M.C.

NEW MILITARY ORTHOPÆDIC CENTRE.

A movement is on foot to establish in Ireland another auxiliary hospital for the treatment of sailors and soldiers who have lost limbs. A committee for the purpose has been formed with the co-operation of Surgeon-General Ford, D.D.M.S., Irish Command, and H.R.H. the Duke of Connaught has consented to be patron. A suitable building has already been secured and submitted to structural alterations, and an appeal has been issued for funds.

THE COMMITTEE ON WAR DAMAGE.

On two occasions Mr. Asquith declined to receive deputations, the object of which would have been to obtain compensation out of national funds for damage inflicted in the United Kingdom by hostile aircraft or bombardment. The policy of the late Government was to encourage insurance, which the State undertook to conduct. This, however, was only designed to compensate for damage done to property, and left uncovered the risk of personal injury or loss of life, a risk affecting many who would be unlikely, or unable, to protect themselves by the payment of premiums.

An appeal for sympathetic treatment in this direction has now been raised by those who are interesting themselves in the effort to secure State compensation for all affected, whether in person or property. The Lord Mayor of York at a meeting at which the late Prime Minister's refusal to reopen the question was discussed, stated that the bodies asking for State compensation—the Committee on War Damage, combined with the Association of Municipal Corporations—after allowance for overlapping, represent 718 municipalities with a population of more than 28 millions, and whatever inference may be drawn from these figures, there appears to be a considerable body of public opinion in favour of the movement organised by the committee. Presumably, from the prominent support given by the municipalities, that body by no means intends to drop the question of loss inflicted upon property, while emphasising the hardship inflicted by the death or disablement of individuals. The memorial prepared for presentation to the late Prime Minister laid stress upon the example of France in paying compensation for all war damage, a liability with which that sought to be imposed upon our Government would hardly bear comparison. Leaving out the question of what should be done in the remote contingency of a hostile landing upon our shores, there is much to be said in the present circumstances in favour of a burden being borne by the State which falls with undeserved inequality upon those who live or happen to own property near to certain parts of our coasts. These are persons who might in the existing circumstances be reasonably expected to insure, but insurance in itself constitutes a heavy tax to pay for the accident of residence or local interests. Many, however, besides these have suffered from the visits of Zeppelins in districts which for some time were believed to be safe from such dangers either through their remoteness from the coast or through faith in the efficacy of defence measures which only recently have proved successful. Many, too, have sustained loss or personal injury through the dropping of bombs at random in inland rural districts, remote from military stations and from centres of industry connected with the preparation

of war material. These can hardly be blamed for having neglected to insure against risks the possibility of which they did not realise. The matter, however, would appear to be one in which weight may well be given to public opinion, particularly if it is voiced by responsible persons who can establish their right to represent their fellows.

ROYAL VISIT TO THE WOUNDED.—On the afternoon of Christmas Day the King and Queen, accompanied by Princess Mary, Prince George, and Prince Henry, visited the King George Hospital in Stamford-street, where there are over 1600 wounded soldiers, all of whom were personally greeted by one of the Royal party, and received at their hands a copy of Queen Mary's Gift Book. Queen Alexandra paid a visit to the hospital at Millbank which bears her name.

Medical News.

UNIVERSITY OF DUBLIN, TRINITY COLLEGE, SCHOOL OF PHYSIC.—At examinations held recently the following candidates were successful:—

PRELIMINARY SCIENTIFIC EXAMINATION.

Botany and Zoology.—Mervyn Edmund McBrien, Mary Horan, William Theodore Micks, and George Cyril Brereton Robinson.
Chemistry.—Joseph Eugene Deane (high marks), Eileen Hilda Dowse (high marks), William Theodore Micks, Eileen Anna Burns, Mervyn Edmund McBrien, George Ernest Sainsbury, Edward Hazlett Fraser, Charles John de Vere Shortt, Patrick Joseph Healy, Frederick Wynand Pienaar, Robert Young Crichton, Henry Ignatius Emmet Powell, Nora Griffith, Joseph Hirschmann, Mary Horan, and Cecil Samuel Wilson.

Physics.—George Ernest Sainsbury, Henry Ignatius Emmet Powell, George Cyril Brereton Robinson, and David Samuel Thomson.

INTERMEDIATE MEDICAL EXAMINATION, PART I.

Anatomy and Physiology and Histology.—John Farneworth Sheppard, Gertrude Rice, Gerald Fitzmaurice Keatings, Athanas Blagoff, Jessie Gilbert, and Richard Dominic Murphy (Anatomy, completing examination).

INTERMEDIATE MEDICAL EXAMINATION, PART II.

Applied Anatomy and Applied Physiology.—William Bruce Briggs, M.A.

FINAL MEDICAL EXAMINATION, PART I.

Medical Jurisprudence and Hygiene, Materia Medica and Therapeutics, Pathology.—Harry Lee Parker (high marks), Patrick Bernard Moloney (high marks), Lindley Albertyn, Stanley Cyril Mitchell, James Michael Hill, Ernest Edward Rollins, Wilfred Vincent Pellissier, William Swetsman, Pieter Johannes Swanepeol, Percival Atkins Dormer, Frederick Gill, Joseph Posner, Eliza Henry, Gilbert Marshall, Jason Grant Bird, Thomas Hugh Robinson McKiernan, William Alfred Shannon (omitting Pathology), and Eric Reginald Tivy (omitting Pathology).

FINAL MEDICAL EXAMINATION, PART II.

M.B., Medicine.—John Philip Macnamara, Clotilda Bayne Bevis, Joseph Godfrey Bird, Thomas Paul Chapman, Edward Parker, Michael Christoffel Dippenaar, and John James Kestley.
B.Ch., Surgery.—Clotilda Bayne Bevis (high marks), Frederick Joseph Smith (high marks), William Frederick Wight, Patrick Rock, Alan Francis Grimby, William Garde Browne, John Philip Macnamara, Edward Parker, Gilbert Marshall, Henry Stephen Oamplon, John Thorp Westby, and Thomas Galvin Roche.
B.A.O., Midwifery and Gynecology.—William Petrus Lubbs, Andrew Hope Davidson, Meta Grace Jackson, Michael Christoffel Dippenaar, Henry James Rice, Sidney Alfred Clark, James Arthur William Cullen, Fleetwood William Porter Sullivan, Thomas Edward Hill, Harry Banks, Pieter Johannes Swanepeol, Alan Glynn Wright, William Joseph Hamilton, and William James McClintock.

DIPLOMA IN PUBLIC HEALTH, PART II.

George Edward Palmer, M.R.C.S., L.R.C.P.

PRELIMINARY SCIENTIFIC (DENTAL).

Physics.—Ethel Maud Merrin.

FINAL DENTAL EXAMINATION, B. DENT. SC.

William Burleigh Parr (high marks), Maurice Louis Counihan, and Charles Henry Herbert.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—A special meeting of the Council was held on Dec. 22nd, Sir W. Watson Cheyne, the President, being in the chair. The secretary reported the death of Sir Frederic Eve, who was a member of the Council, a former vice-president, and a former member of the Court of Examiners of the College. He was also a lieutenant-colonel in the Royal Army Medical Corps. A vote of condolence was passed to be sent to Lady Eve and the members of his family. It was stated that the vacancy on the Council occasioned by the death of Sir Frederic Eve would be filled at the meeting of Fellows of the College in July next. Mr. Bilton Pollard was appointed a member of the Committee of Management. The President reported that the term of office of Mr. James Ernest Lane on the Court of Examiners would expire in February, and that the vacancy so occasioned would be filled at the February meeting of the Council. Mr. Lane will not apply for re-election.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College held on Dec. 20th Mr. Dodballapur Sivappa Pattanna, having passed the requisite examinations, was admitted a Fellow.

THE PROFESSIONAL CLASSES WAR RELIEF FUND.—This fund has already dealt with a large number of cases of distress among the women and children of the professional classes who have suffered most from the war. The education of children, the training for suitable careers of youths and girls, and the provision of maternity homes for wives of professional men who are serving their country, are the three chief branches of the work of the Council which administers the fund. This Council represents all the great professional bodies, and is now appealing for further funds to carry on its work. Sir William Dunn, the Lord Mayor of London, as President of the Council, will receive subscriptions at 13, Prince's Gate, London, S.W.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

End of Parliamentary Session.

PARLIAMENT was prorogued on Friday, Dec. 22nd. The new session will begin on Wednesday, Feb. 7th. The King's Speech dealt entirely with the war. "The vigorous prosecution of the war," it said, "must be our single endeavour until we have vindicated the rights so ruthlessly violated by our enemies and established the security of Europe on a sure foundation."

HOUSE OF COMMONS.

THURSDAY, DEC. 21ST.

Licences for Experiments on Living Animals.

Sir G. GREENWOOD asked the Home Secretary whether the two alien enemies whose names appeared in the Annual Returns for 1915 as holding licences to perform experiments upon living animals had now been interned and, if so, at what date; and, if not, whether they still held such licences. —Sir G. CAVE said in reply: One of the two persons mentioned left the country in April, 1915, and his licence was revoked. The other, who is of Polish birth, was exempted from internment on the recommendation of the Advisory Committee, and still holds a licence under the Act.

Sir G. GREENWOOD asked whether the Germans, said to have been naturalised in this country, whose names appeared in the Annual Returns for 1915 as holding licences to perform experiments upon living animals, still held such licences; and, if so, what certificates, if any, did they respectively hold. —Sir G. CAVE answered: Two licences are now held by persons of German origin naturalised in this country. One of them has an A certificate and the other has two A certificates and an E.

Sir G. GREENWOOD asked whether the 16 Japanese subjects whose names appeared in the Annual Returns for 1915 as holding licences to perform experiments upon living animals, or any of them, still held such licences; if so, what certificates, if any, did they respectively hold; and whether he would consider the desirability of confining such licences to British citizens. —Sir G. CAVE replied: Of the 16 Japanese subjects mentioned, 13 have given up their licences, having completed their experiments. Of the remaining three, one holds no certificates, one holds Certificate A only, and the third, a staff surgeon of the Japanese Navy, holds two A certificates, two B certificates, one E, and one EE. I am not aware of any grounds for altering the established practice with regard to the grant of licences to other than British subjects on special conditions. I may point out that this matter was considered by the Royal Commission, who expressed approval of the arrangements adopted by the Home Office in regard to it.

Surgical Appliances for Wounded Soldiers.

Mr. H. LAW asked the Financial Secretary to the War Office whether he was aware that certain of the surgical appliances issued to wounded soldiers in this country and in Ireland were inferior to those supplied in similar cases by the governments of the Dominions; and whether steps would be taken to level up the quality of such appliances to the Colonial standard. —Mr. FORSTER replied: I am not aware that wounded soldiers in this country and Ireland are supplied with surgical appliances inferior to those supplied by the Dominion governments.

FRIDAY, DEC. 22ND.

Medical Reinforcements.

Answering Mr. WATT, Mr. MACPHERSON said: As all the forces overseas have been fully supplied with medical units, there is at the moment only occasion to send individuals as reinforcements.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

ABERGAVENNY, MONMOUTH COUNTY ASYLUM.—Temporary Assistant Medical Officer. Salary £7 7s. per week, with board, &c.
BARNET, CLARE HALL SANATORIUM FOR PULMONARY TUBERCULOSIS, South Mimms, near Barnet.—Assistant Medical Superintendent.
BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £250 per annum, with board, &c.
BOLTON INFIRMARY AND DISPENSARY.—Female Second House Surgeon. Also Female Third House Surgeon. Salaries £200 and £150 per annum, respectively, with board, &c.
BOLTON UNION, FISHPOL INSTITUTION, Farnworth, near Bolton.—Resident Assistant Medical Officer. Salary £383 6s. per annum, with rations, &c.
BOURNEMOUTH, ROYAL VICTORIA AND WEST HANTS HOSPITAL.—House Surgeon, unmarried, for six months. Salary £200 per annum, with board, &c.
BRIDGWATER HOSPITAL.—House Surgeon. Salary £120 per annum, with board, &c.
BRISTOL GENERAL HOSPITAL.—House Surgeon. Salary at rate of £175 per annum, with board, &c.
BUXTON, DERBYSHIRE, DEVONSHIRE HOSPITAL.—Assistant House Physician. Salary £100 per annum, with board, &c.
CARDIFF, KING EDWARD VII.'S HOSPITAL.—Fourth-Year Student Dresser for three months. Salary at rate of 52 guineas per annum, with board, &c.
CHELSEA HOSPITAL FOR WOMEN, Arthur-street, Chelsea, S.W.—House Surgeon, unmarried. Salary £80 per annum.
ECCLESALL BRIDLOW UNION INFIRMARY.—Resident Assistant Medical Officer. Salary £250 per annum, with board, &c.
HARBOROUGH INFIRMARY.—Resident House Surgeon.
HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Surgeons, Assistant Casualty Medical Officer, and House Physician, unmarried. Salary at rate of £50 per annum each, with board, &c.
LEDBURY UNION, BOSBURY DISTRICT.—Medical Officer. Salary £75 per annum.
LEEDS CITY HOSPITALS FOR INFECTIOUS DISEASES AND TUBERCULOSIS.—Assistant Medical Officer. Salary at rate of £250 per annum, with board, &c.
LIVERPOOL CORPORATION.—Female Second Resident Medical Officer for Isolation Hospital and Sanatorium, Groby-road. Salary at rate of £250 per annum, with board, &c.
LONDON HOMOEOPATHIC HOSPITAL, Great Ormond-street, London, W.C.—Two Resident Medical Officers. Salary £80 per annum, with board, &c.
METROPOLITAN HOSPITAL, Kingsland-road, N.E.—Resident Medical Officers. Salary at rate of £150 to £200 per annum, with board, &c.
MIDDLESBROUGH, NORTH ORMESBY HOSPITAL.—Assistant House Surgeon. Salary £150 per annum, with board, &c.; if a Senior Student, salary £100 per annum.
NORTHAMPTONSHIRE WAR HOSPITAL.—Resident Medical Officer. Salary £1 per day, with board, &c.
NOTTINGHAM AND MIDLAND BYE INFIRMARY.—Female House Surgeon.
QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Physician and House Surgeon for six months. Salary £100 per annum, with board, &c. Also Temporary Assistant Physician.
ROYAL NATIONAL ORTHOPEDIC HOSPITAL, 234, Great Portland-street, W.—Resident Surgical Officer.
SUNDERLAND, COUNTY BOROUGH EDUCATION COMMITTEE.—Temporary Female School Medical Officer. Salary £300 per annum.
VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST ON THE SEPARATE PRINCIPLE.—Assistant Resident Medical Officer.

Births, Marriages, and Deaths.

BIRTHS.

BECHER.—On May 21st, at Thornwood, London, Ontario, the widow of Major Archibald Becher, R.A.M.C., Canadian Infantry—a son.
BLACK.—On Dec. 17th, at Newton Cottage, Alverstoke, Hants, the wife of Staff Surgeon F. G. H. R. Black, R.N.—a daughter.
HOWELL.—On Dec. 22nd, at Harley-street, W., the wife of C. M. Hinds Howell, M.D., F.R.C.P., of a son.

MARRIAGES.

YOUNGER—ABDY.—On Dec. 16th, at St. Bartholomew's Church, Gray's Inn-road, W.C., by the Lord Bishop of Willesden, assisted by the Rev. W. P. Cromie, M.A., R.D. (uncle of the bride), George Guthbert Nelson, L.R.C.P. Lond., M.R.C.S. Eng., of Bovey Tracey, South Devon, only surviving child of E. G. Younger, M.D., M.R.C.P., D.P.H., and Mrs. Younger, of 2, Mecklenburgh-square, W.C., to Lillian Elizabeth, second daughter of the Rev. H. H. and Mrs. Abdy, of St. Bartholomew's Vicarage, W.C.

DEATHS.

BLANDFORD.—On Dec. 23rd, at The Manor, Norton, Stockton-on-Tees, Dr. J. W. Blandford, J.P., Hon. Colonel, R.A.M.C., aged 69.
FREER.—On Dec. 21st, at Hill Ridware, John Henry Freer, L.R.C.P., M.R.C.S., late of Rugeley, in his 80th year.
GELSTON.—On Dec. 24th, in London, John Seymour Gelston, L.R.C.P.I., L.R.C.S.I., of Ixworth House, Ixworth, Suffolk.
LITTLE.—On Dec. 23rd, at his residence, St. Stephen's Green, Dublin, James Little, M.D., Regius Professor of Physic, Dublin University, in his 80th year.
McKERRAW.—On Dec. 23rd, of wounds, Charles Kenneth McKerraw, M.A., M.B., B.C., M.R.C.S., L.R.C.P., Captain, R.A.M.C.
N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE MEDICAL PROFESSION IN NORWAY IN 1816.

In a brief but interesting account of the position of medical and surgical practitioners in Norway a hundred years ago Dr. M. Söegaard gives a reproduction of the first official list of those then authorised to practise in that country. The list was issued by the Third Department of the Government and is dated Feb. 20th, 1816. The first thing that strikes the reader is its brevity; it contains no more than a hundred names. Norway was one of the countries that had the misfortune to back the losers in the Napoleonic wars. In 1800 the Danish Government, the predominant partner in the union of Denmark and Norway then existing, committed the Norwegians to the second armed neutrality. When this was broken up by the bombardment of Copenhagen, Denmark and Norway supported Napoleon against both England and Sweden in 1807. Rapid economic ruin was the result, and in 1814 Frederick VI. of Denmark ceded Norway to Sweden. Sweden had previously joined the Allies against Napoleon; the Act of Union made Sweden and Norway equally independent countries, bound together under a single king in an offensive and defensive alliance, which survived till 1905. To return to the year 1816, it may be said that the economic condition of Norway was then deplorable; trade was bad, there was much general poverty, the country was bankrupt. The population numbered something over 900,000 souls, yet, as Dr. Söegaard proves by quotations from letters written by medical men at the time, many of them found it hard to earn even a livelihood. "How I shall get on this year and in the future," writes Chief Surgeon Bencke, of Fredrikvaern, "I do not know; my time is stolen from me, I am a slave from morning till night. My pay is about 64 skillings a day. . . . I do not even know the name of civil practice here." The skilling was worth nearly a halfpenny. Two medical men practised in the town of Stavanger; the senior of these, Landphysicus (or chief district physician) Fangel, writes of his junior, the assistant physician, "he is so good in helping the poor that with my whole heart I wish his brave man an old age free from crushing anxiety about his daily bread, for the hundred rigsbankdaler he gets as assistant at the hospital barely supply the first necessities of life." The rigsbankdaler or rixdollar of 96 skillings was worth less than four shillings; clearly this assistant was not one of those passing rich on (nearly) twenty pounds a year. It is not surprising to read that when Chief Naval Surgeon Heiberg won a large sum of money in the Hamburg lottery of 1814 he hastened to throw up his practice and go into business as a shipowner and wholesale merchant. But in 1828, alas, he failed, and had to return to his old profession as regimental surgeon at Horten. Here, "separated from his family, he lived in a very small way until he was appointed district doctor at Tönsbet." Clearly the hundred medical men practising in Norway in 1816 had a hard time of it. Yet few and ill paid as they were they all had official titles, many of them titles as magnificent as apparently empty of all save credit and renown. Most of these titles had to do with surgery, and at least a dozen varieties of surgeons are distinguished in the official list of 1816. Twenty-seven of the hundred practitioners it contains are described as "unexamined Bataillonschirurger," battalion surgeons who had not presented themselves—or who had not successfully presented themselves—for examination. Seventeen are regimental surgeons, 11 are district surgeons, 6 are candidates in surgery. Others are set down as town surgeons, mine surgeons, senior surgeons, under surgeons, company surgeons, battalion surgeons, divisional surgeons, supernumerary regimental or battalion surgeons, or town and district surgeons. The mere physicians are fewer than the surgeons in the list, but enjoy a no less copious and perplexing variety of titles. Two are described as doctors of medicine, though 11 others are mentioned as holding the degree of Dr. Med.; one is a doctor of both medicine and surgery, and 6 are described as "Landphysici," or head physicians of their districts. A seventh "Landphysicus" is set down as also a medical candidate, as though not fully qualified, while an eighth is described as "Bergmedicus" (or mine medico) as well as "Landphysicus," though the distinction between the capacities of a "medicus" and a "physicus" is not at once apparent. Apart from the doctors of medicine, the "medici," and the "physici," come practitioners of a fourth description, those set down in Norwegian as "Læger," or, in English, leeches. The leeches existed in various capacities, and are distinguished as leeches, practising leeches (what did a leech do if he did not practise?),

works leeches, infirmary leeches, private leeches, district leeches, under leeches, and Lazareth leeches. Finally, there may be mentioned two practitioners described as medical candidates, comparable in status to the surgical candidates, no doubt. One of these medical candidates was also professor of botany at Christiania; the other was also a private leech. The Lazareth leech was in practice at Larvik, and is described in the list as a surgical candidate and "physicus" as well. His Lazareth or lazaretto may have been either a fever hospital or a hospital for lepers, but it may be added that special provision was made for leprosy in Norway by the appointment of an "unexamined assistant" at the Stavanger *Radesygehus*, or home for lepers, and a "Titular Professor," who was also "chief inspector for leprosy," at Tönsberg. Yet another professional title may be mentioned, if only for its grim sincerity. At Vinger there practised a "Forhen-værende Regiments Feltskjaer," or ex-regimental field shearer, to give a literal translation of his official title, as though the surgery on the field of battle had consisted mainly of immediate amputations.

VACCINATION ON THE FOOT.

To the Editor of THE LANCET.

SIR,—I shall be glad if any of your readers can give me the particulars and results of vaccination on the foot.

I am, Sir, yours faithfully,

JAMES MARSH, M.B. Edin.

114, High-street, Atherton, near Manchester, Dec. 22nd, 1916.

LETT'S "QUIKREF" DIARIES.

WE have received some specimens of the diaries published by Messrs. Cassell and Co. under the above title. The list includes books for the office, the study, the counter, and the pocket, the sizes varying accordingly, and the bindings from leather through the various forms of cloth to paper. The prices are from 1s. to 16s. An accident insurance coupon accompanies each diary. For medical men a diary 7 in. by 3½ in. is provided, showing a week at an opening of two pages and ruled with columns for the insertion of visits to 54 patients. Bound in cloth, with pencil, the price is 2s. 6d., or in French morocco, with tuck and two pockets, 5s. There are intermediate prices according to style of binding. An excellent diary for nurses, price 2s. 6d., bound in red leather cloth, contains, in addition to the usual almanac, spaces ruled for nurses' reports of the patients' progress and an index. The diary shows a week in an opening.

At a season for exchanging gifts, when necessary economy and generosity are likely to clash, a diary may solve the difficulty. All the above-mentioned books are printed on good tough paper and bound with an eye to hard wear.

PUBLIC HEALTH AND VITAL STATISTICS OF CYPRUS.

ACCORDING to the Cyprus Blue-book for the year 1915 the estimated population of the colony is 294,664. In 1915 there were 9141 births, the rate being 31 per 1000; the number of deaths returned was 5473, or 18·5 per 1000. The public health and general sanitary condition of the island have been satisfactory; there was complete immunity from plague and cholera, and no severe quarantine restrictions were imposed. The number of cases of typhoid fever, which in Cyprus is generally of a mild type, was 267, as compared with 341 in 1914. On the other hand, 11 cases terminated fatally, as against 8 in the previous year. There were 9 cases of diphtheria with 6 deaths, but only 6 cases of cerebro-spinal meningitis (5 deaths). 6701 vaccinations were performed during the year, and there was no case of small-pox.

This is the third year of the campaign against malaria initiated by Sir Ronald Ross in 1913, and it is satisfactory that the reduction in the cases of malaria and the spleen-rates is considerable. There were 2083 cases less than in the previous year, and the spleen-rate, which was returned at 22·3 per cent. in the spring of 1913, has now fallen to 11·5 per cent. The reduction is fairly evenly distributed over the island, but the greatest decrease is shown in the Larnaca and Famagusta districts, which were also the most malarial, and this is due in great measure to the extensive drainage works that have been carried out. The cases of malaria admitted to the six district hospitals in 1915 amounted to 167, of which only 6, or 3·5 per cent., terminated fatally.

Further work in improving the Nicosia General Hospital, a Government institution, has been carried out. The electric light installation is now complete, and an X ray apparatus has been provided. Two separate wards for dealing with septic cases in the women's side of the hospital have been built. The number of beds remains at 53. A total of 1196 patients received treatment in the wards of the institution during the

There were 59 deaths. 6381 persons obtained treatment in the out-patient department. The district hospitals of Larnaca, Limasol, Famagusta, Paphos, and Kyrenia have continued to carry out their valuable work; the total number of in-patients during the year was 1278 and of out-patients 12,303. There were only 5 admissions to the leper farm, as against 12 in 1914, and there were 10 deaths. The number of cases living in the farm at the close of the year was 92, the lowest on record in the present century.

It is recorded that the island has been in use by the military authorities as a convalescent resort. There have been constant arrivals and departures of convalescents from Egypt and elsewhere, and the benefit they derived from the salubrious climate has been considerable. The absolute mean temperature for the year was 66.48° F., as against 65.21° in the previous year. The mean rainfall was 16.12 inches, as against 23.49 inches during 1914, and an average of 21.89 inches during the last ten years.

MILK IN THE REARING OF INFANTS.

To the Editor of THE LANCET.

SIR,—Will any of your readers kindly inform me what should be done in the rearing of infants when milk cannot be taken? The child in question is now 15 months old and refuses milk in any form; if pushed she retches.

I am, Sir, yours faithfully,

Dec. 26th, 1916.

M.D., M.R.C.P.

One of Them.—We understand that the arrangement of local collectors for Epsom College has not been discontinued. In numerous districts, however, the honorary local secretaries are engaged on military duties, and at their request the central office is looking after the local subscriptions. New collectors where the College is not already represented.

Medical Diary for the ensuing Week.

SOCIETIES.

RÖNTGEN SOCIETY, Institution of Electrical Engineers, Victoria Embankment, W.C.

TUESDAY.—8.15 P.M., General Meeting. Paper:—Mr. C. A. Schunk: A Spectroscopic Investigation of Some Sources of Ultra-Violet Radiation in Relation to Treatment by Ultra-Violet Rays.—Dr. Batten will describe a Simple Cross-thread Frame for Use in Localisation.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynaecological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics.—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whiphram). Gynaecological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics.—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whiphram); Eye Out-patients (Mr. R. P. Brooks). Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynaecological Operations (Dr. A. B. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

Christmas Lectures:—The Human Machine which All must Work (adapted to a Juvenile Auditory).

TUESDAY.—Prof. A. Keith: Living Pumps.

THURSDAY.—Prof. A. Keith: Living Bellows.

SATURDAY.—Prof. A. Keith: Living Workshops.

EDITORIAL NOTICES.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed exclusively "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C.

MANAGER'S NOTICES.

ALTERATION IN THE PRICE OF "THE LANCET."

INCREASED war expenses and cost of production necessitate an increase of the price of THE LANCET. Commencing with the first issue in the New Year, the price will be 3d. instead of 6d. The rates of subscription will remain as revised in October.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and not to THE LANCET Offices.

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THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

Subscribers abroad are particularly requested to note the rates of subscriptions given on page 4.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET OFFICE, Dec. 27th, 1916.

| Date. | Rain-fall. | Solar Radio in Vacuo. | Maxi-mum Temp. Shade. | Mis. Tem. | Wet Bulb. | Dry Bulb. | Remarks. |
|---------|------------|-----------------------|-----------------------|-----------|-----------|-----------|----------|
| Dec. 21 | ... | 51 | 50 | 36 | 42 | 42 | Raining |
| " 22 | 0.39 | 48 | 46 | 39 | 40 | 41 | Overcast |
| " 23 | 0.35 | 43 | 42 | 4 | 43 | 43 | Raining |
| " 24 | 0.47 | 47 | 46 | 36 | 37 | 38 | Fine |
| " 25 | ... | 44 | 43 | 33 | 34 | 35 | Raining |
| " 26 | ... | 38 | 38 | 32 | 32 | 32 | Foggy |
| " 27 | ... | 34 | 34 | 29 | 31 | 31 | Foggy |

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

The following journals, magazines, &c., have been received:—Proceedings of the Royal Society of Medicine, Medical Times, British Journal of Dental Science, Military Surgeon, Canadian Practitioner and Review, Liverpool Medical-Chirurgical Journal, Archives of Radiology and Electrotherapy, Annali d'Igiene, Annales de l'Institut Pasteur, Surgery, Gynecology, and Obstetrics, Tropical Diseases Bulletin.

Communications, Letters, &c., have been received from—

A—Ardath Tobacco Co., Lond.; Anglo-French Drug Co., Lond.; Dr. J. Alkman, Guernsey; Dr. T. D. Acland, Lond.; Dr. E. Atkinson, Perth, Western Australia; Mr. J. G. Andrew, Glasgow; Mr. F. W. Alexander, Lond.; Dr. A. Ashkeny, Basingstoke; Messrs. Armour and Co., Lond.; Dr. J. H. Ashworth, Cliftonville; Mr. A. G. Attenborough, Nottingham.

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C—Dr. E. M. Clarke, Truro; Mr. F. J. Cruise, Balingglass; College of Nursing, Lond., Sec. of; Messrs. E. Cook and Co., Lond.; Dr. R. Cantemerle, Amsterdam; Carnegie Endowment for International Peace, Washington, Sec. of; Rev. Dr. Clarke, Cross-gates.

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I—India, Under-Secretary of State for, Lond.

K—Mrs. W. V. Knowles, Reading; Messrs. T. Kerfoot and Co., Bardsley; King Edward VII. Welsh National Memorial Association, Cardiff, Sec. of; K. A. O.; Messrs. C. Knight and Co., Lond.; Capt. A. Kinder; Mr. A. Kidd, Gravesend; Mr. E. H. Kerr, Truro.

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O—Dr. C. O'Gorman, Bourne End; Capt. S. J. Ormond, R.A.M.C.; Dr. H. Oppenheimer, Lond.

P—Messrs. P. B. Potter, Lond.; Lieut. P. Perron, S.A.M.C.; Pharmaceutical Society of Great Britain, Edinburgh, Resident Sec. of; Messrs. B. K. Paul and Co., Calcutta; *The Prescriber*, Edinburgh, Publisher of; Dr. E. Pritchard, Lond.; Major W. Pearson, R.A.M.C.; Mr. C. D. Pickles, Leeds.

R—Dr. J. K. Reid, Morvern; Robert Baker Hospital, Sayre, U.S.A., Supt. of; Royal Albert Institution, Lancaster, Sec. of; Messrs. Richardson and Co., Lond.; Mr. J. Rutherford, Harrogate; Royal Faculty of Physicians and Surgeons, Glasgow, Librarian of; Dr. R. Rentoul, Liverpool; Dr. R. J. Rowlette, Dublin; Mr. H. M. Rainsford, Lond.; Messrs. Reynell and Son, Lond.; Royal Medical Benevolent Fund, Lond.; Dr. J. Rae; Royapuram Medical School, Madras, Supt. of; Lieut. W. Roche, R.A.M.C.; Royal Institution of Gt. Britain, Lond.; Röntgen Society, Lond., Sec. of; Mr. J. Ruffie, Ware; Mrs. Robertson, Karnal.

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Mr. C. E. Salisbury, Rochester; Dr. F. E. Stupnicki, Burgdorf; Mr. H. M. Swanwick, West Hartlepool.

T—Mr. J. Thinn, Edinburgh; Dr. H. P. Thompson, Crowland; Dr. J. Tatham, Old Oxted; True Temperance Association, Lond., Sec. of.

W—Dr. T. N. Wilson, Istock; Dr. W. H. Whitehouse, York; Surg. C. F. G. Wakeley, R.N.;

Dr. A. P. Walters, Lybri; Dr. A. C. Wilson, Farnham; Mrs. Webb-Johnson, Clacton-on-Sea; War Office, Chief Postal Censor of; Dr. N. Wood, Lond.; Col. C. G. Watson, O.M.G.; Mr. C. F. Walters, Clifton; Dr. P. Wilde, East, West London Hospital Post-Graduate College; Mr. A. G. Wilkins, Aldershot; Mr. R. H. Wilmot, Greta; Dr. B. W. A. Walker, Oxford.

Letters, each with enclosure, are also acknowledged from—

A—Surg. G. L. Attwater, R.N.; Capt. H. L. Attwater, R.A.M.C.; Mr. E. Arnold, Lond.; Mr. J. E. Adams, Lond.; Dr. F. Y. Abo-Hishebid, Kena.

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